

# MAKING PROMETHEUS PAYMENT® RATES REAL: YA' GOTTA START SOMEWHERE

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The seeds of the PROMETHEUS Payment® model<sup>1</sup> were sown with the first Design Team meeting in December 2004. A small group of experts and stakeholders from multiple disciplines and with diverse skill sets came together with one goal—to design an entirely different approach to paying for health care which would simultaneously improve quality, lower administrative burden and pay providers fairly for what science says should be brought to bear to treat a patient for a specific condition or constellation of conditions. Undaunted by the fact that many others had struggled with this challenge, but none had yet succeeded, the group used an explicit process (Design for Six Sigma) to mediate the differences among the diverse perspectives participating in developing an actual payment *model*, rather than yet another series of reform principles.

For months the project didn't even have a name. The members of the group ebbed and flowed as time went by, but a core group remained as the founding Design Team members.<sup>2</sup> The group met monthly, and ideas solidified. Eventually the name itself spoke to the core values of the emerging model: **P**rovider payment **R**eform for **O**utcomes, **M**argins, **E**vidence, **T**ransparency, **H**assle-reduction, **E**xcellence, **U**nderstandability and **S**ustainability (PROMETHEUS).

The project received a significant boost starting in 2007 when the Robert Wood Johnson Foundation provided first a \$374,000 planning grant followed by much larger \$6.4 million grant. This funding has helped and will continue to help the Design Team refine the payment model and will support the implementation and testing of the PROMETHEUS Payment® design in four pilot sites over three years.<sup>3</sup>

The purpose of this paper is to explain in laymen's (non-methodologists' terms)<sup>4</sup>: (1) the principles behind the construction of rates; (2) the compromises the Design Team made to make the rates real; (3) the protections built into the approach because of the need to rely on claims data; (4) the analytical process used to construct the rates for two clinical conditions—diabetes and acute myocardial infarction; and (5) how the mechanism has demonstrated that this model can improve quality, pay good providers more than they are getting today, and still save considerable money, for the system and employers who pay for the care. As we demonstrate in this paper, the scope of the savings is startling if our mechanism works.

<sup>1</sup> This paper assumes basic familiarity with the PROMETHEUS Payment® model. It is intended to explain our initial technique for constructing rates. For basic information about the model go to [www.prometheuspayout.org](http://www.prometheuspayout.org).

<sup>2</sup> More information about the Design Team can be found at [www.prometheuspayout.org](http://www.prometheuspayout.org).

<sup>3</sup> The refinement of the PROMETHEUS Payment® model as well as the demonstration and testing of PROMETHEUS Payment® model is funded solely by the Robert Wood Johnson Foundation.

<sup>4</sup> The full methodology is described and available in "The ECR Playbook" at <http://www.prometheuspayout.org/playbook/1.0/PrometheusPlaybookv1.0-04-21-08.pdf>.

## The Basic Concept

The basic idea was and is relatively straightforward: Taking good clinical practice guidelines (CPGs), calculate what it would cost to deliver the services that science recommends to treat a patient for the condition addressed, taking into account all of the providers which would treat that patient for that condition. This would be the Evidence-informed Case Rate™ (ECR™)—‘informed’ rather than ‘based’ because (a) there is not always the highest quality of evidence to support the appropriateness of services; and (b) CPGs often do not speak to all aspects of care which must be provided to make the guideline’s process happen.

The ECRs™ would be risk-adjusted to take into account the severity and complexity of the patient’s clinical condition until the clinical presentation reached such a stage of complexity that an additional ECR™ would be opened or the ECR™ would be ‘discontinued’, reverting to traditional payment. Providers would declare which portions of the case rate they agreed to deliver and at what price.

A portion of that agreed-upon payment would be held back in a Performance Contingency Fund, which would be paid to the provider based upon performance measured in a Scorecard, which would take into account whether the salient elements of the CPG were provided as agreed to, the patient’s experience of care, and the outcomes of care. To create an explicit incentive for clinical collaboration among otherwise independent providers and practitioners, 70 percent of the provider’s score would be based on what that provider did, but 30 percent of the scores would turn on what every other provider treating that patient under that ECR™ did. By that method, the portion of the withhold paid would depend in part on explicit clinical collaboration among providers. Success would depend on whether all of them could perform in accordance with the PROMETHEUS Payment® incentives. Explicit tenets<sup>5</sup> underlie the way this process would unfold if the program were to be considered consistent with the specific values that characterize the payment as consistent with the “PROMETHEUS Payment®” brand as distinct from any other case rate payment model.

The Design Team has always known that the software to make this program work would be complex to construct and administer. Some to-be-developed mechanism would have to take the services provided by disparate providers and track them back to the agreed-upon individually applicable portions of the ECR™. For providers to change behavior, they would have to receive real-time reports on their performance, so they could modify their behavior for better results. To select their clinical collaborators, they would need information about other providers’ performance. The payments would have to take into account the Performance Contingency Fund withholds, and then the Scorecard results would have to be applied to determine the pro rata payment, if any, the providers had earned back from their Funds.

<sup>5</sup> See the Tenets of PROMETHEUS Payment at <http://www.prometheuspayment.org/mission/tenets.htm>.

Our partners in creating the necessary software are IRP Claimshop, which is developing that part which will track the care provided to patients and allocate dollars to the providers rendering portion of the care, and Bridges to Excellence, which is developing the Scorecard which will also be able to report to providers their comparative performance, create the scores for each ECR™, identify the data to generate the scores, perform the measurements for each provider, and communicate the scores back to the plans along with payment recommendations. Together, BTE and IRP constitute the first ‘service bureau.’

## Confronting Reality

The first major presentation of the ideas upon which the Design Team had agreed was the White Paper, which was released for comment in early 2006. Many of the almost 40 substantive comments and critiques became incorporated into Frequently Asked Questions (FAQs)<sup>6</sup>. By December 2006, some of the core ideas had changed in response to further consideration by the Design Team, additional comments from the field, and a better understanding of the barriers and challenges to making the concepts real.

Deciding which ECRs™ to model initially was the first challenge. The program would need proof of concept in pilot implementations. To make these pilots meaningful, the initial ECRs™ would have to address clinical conditions which were variably primarily office-based, both office- and hospital-based including other providers, primarily hospital-focused, and some subject to real variability in core complexity of the basic treatment. To accomplish those goals, the Design Team chose primary chronic care, cancer, joint replacement and cardiac conditions as the initial types of clinical care on which to focus.

In 2006 and 2007 with a \$300,000 grant from the Commonwealth Fund a group of well-recognized clinicians<sup>7</sup> from each of those specialty areas was convened, in multiple telephone conversations and a face-to-face meeting, to select specific conditions and good supporting CPGs. Then they deconstructed those CPGs by analyzing which specific services (e.g. visits, diagnostic tests, treatments, procedures, drugs, etc.) would create the continuum of care. These identified services would be the basis on which to convert a CPG into an actual payment amount. The initial conditions and CPGs selected were colon cancer through Stage III based on National Comprehensive Cancer Network® guidelines; hip and knee replacement (without explicit CPGs, but immediate agreement among the clinicians as to what should be done); diabetes with and without co-morbidities based on Institute for Clinical Systems Improvement (ICSI) guidelines; age- and gender- specific preventive medicine as defined by the Preventive Health Services Task Force; depression in primary care, based on ICSI guidelines; and three cardiac conditions, all based on American College of Cardiology-American Heart Association

<sup>6</sup> <http://www.prometheuspayers.org/FAQs/index.htm>.

<sup>7</sup> Dubbed the “ECR Working Groups,” they are listed on the website, <http://www.prometheuspayers.org/mission/designteam.htm>.

practice guidelines—mitral valve regurgitation, non-ischemic congestive heart failure and ST elevated myocardial infarction (STEMI).

By the time that initial work was done, we had two major papers<sup>8</sup> presenting ideas somewhat different from the original White Paper, which no longer stood for what had evolved since its drafting. At that point, we withdrew the initial paper from our website.

## Costs Versus Claims: Creating The Cushions

How to translate the deconstructed CPGs into ECRs™? PROMETHEUS Payment® Inc., the tax-exempt, not-for-profit corporation which had been formed to steward the implementation of the model, engaged a cardio-thoracic surgeon by training and practice, methodologist by experience, Amita Rastogi, MD, MHA, to serve as Medical Director of the program with primary responsibility for developing ECRs™.

The first practical dilemma, which the Design Team had understood from the start, was that no one of whom we were aware—no health system, no provider group, no health plan, no government agency, no specialty society—actually had real information about what it costs to treat a patient for a condition as called for in any CPG. We would have to start with some financial surrogate for actual costs.

We obtained access to two major national claims databases with several million patients and their claims from 2005 and 2006. Broad as they were, the limitations of these databases would also drive certain aspects of what we could do in modeling the first case rates. First, to be fair to providers, we would have to accommodate what we understood would be seen as the ‘perversion’ of the ‘costs’ in the databases, by recognizing that fee schedules on which claims were paid were often artificially depressed by payors in an environment of considerable overuse of services. At the same time, there were costs hidden as a result of benefit design which would blind some of the actual costs—such as use of non-physician practitioners and first assistants at surgery. We would put back arbitrary cushions of dollars to make up for these deficits. There are five explicit cushions built into the ECR™, in each of the blocks in Figure 1, each of which is explained more fully in the following discussion.

<sup>8</sup> Gosfield, “The PROMETHEUS Payment™ Model: A Legal Blueprint”, HEALTH LAW HANDBOOK, 2007 ed., West, A Thomson Group Company, pp. 79-129. <http://www.prometheuspayers.com/publications/pdf/PrometheusPayment2.pdf> and de Brantes and Camillus, “Evidence-informed Case Rates: A New Payment Model,” (April 2007) The Commonwealth Fund, [http://www.prometheuspayers.com/publications/pdf/deBrantes\\_evidence-informedcaserates\\_1022.pdf](http://www.prometheuspayers.com/publications/pdf/deBrantes_evidence-informedcaserates_1022.pdf).

Figure 1. **ECR™ Build-up**

$$\text{Total ECR price} = \text{Type of services} * \text{Frequency} * \text{Price per service}$$

Based on 50% of current defect rate	Allowance for Potentially Avoidable Complications
Currently based at 10%	Margin
Arrived at through step-wise multi-variable regression model	Severity-adjustment caused by known patient health status
Adjusts ECR for local patterns	"Normal" variation reflecting practice patterns
Informed by guidelines and empirical data analysis	Core services that are recommended by best practice or evidence

To get to a complete case rate, we would have to reaggregate claims from all providers, which the ECR™ Working Groups had said would represent appropriate services called for in the CPG. We would have to look at the claims pertaining to inpatient facility, inpatient professional, outpatient facility and outpatient professional services including pharmacy and then stitch those back together.

The first challenge was that to make this new payment approach truly reflect payment based on a patient's clinical needs, we would have to define the core set of services recommended by the CPG as analyzed by the Working Groups and add data from best practice, allowing for empirical data from the databases, which might not be captured in the CPG. By this method, the pure services in the CPG with its gaps and its presumed idealized patient, often criticized by some as too platonic and not applicable in the real world, would be enhanced by reference to what typically was actually provided to patients receiving care which otherwise conformed to the CPG. The Working Groups suggested services implied in the CPG, but not specifically stated or acknowledged, such as nurse coordinator interactions with patients. This built a cushion for the 'depressed' nature of the claims data. Then, this dollar amount would have to be augmented by an additional supplement to account for normal variation in patients. The Design Team believes that because of the volume of overuse caused by complications of care, which this model explicitly calls out and focuses on reducing, additional dollars will be available to support those unarticulated in the CPG, but necessary services. We further believe, therefore, the ECRs™ will offer sufficient payment to garner acceptance when applied locally, so there is less likelihood the rates will be challenged as a Utopian, and therefore impractical version of what the range of services and payment should be.

On top of this calculation, we would still have to add dollars to severity-adjust the basic rate to reflect known patient health status, which appropriately would require additional services to meet their needs. This function was performed by a stepwise regression analysis, which will be described in its simplest terms below.

To that figure we would add an arbitrary, but explicit 10 percent margin on the base price to account for depressed fee schedules, acknowledge the elimination of overuse and underuse in this model and permit provider entities to operate and continue to invest in infrastructure and improvement.

Finally, we would add yet a further amount to take into account inevitable ‘care defects’—problems that arise because no matter how good a provider is, there are patient factors a provider cannot control. Every ‘potentially avoidable complication’ cannot actually be avoided. Some allowance for some volume of process failures would be accommodated. Because the amount we are adding on top of the other cushions is 50 percent of today’s expenditures on potentially avoidable complications (PAC), we refer to it as the ‘PAC Pool.’ The intention here is two-fold: (1) by acknowledging that some complications are inevitable, providers are reassured that their payment amount is both certain and fair; (2) by allocating only 50 percent of what is paid for potentially avoidable complications today, there is a powerful incentive to work to avoid them in the first place. Initially very good providers with very low complication rates may experience a veritable windfall from this effect. Over time, this pool of money will shrink, as it should, because care will improve and avoidable complications will decrease. Still further, by allocating only half of what is currently paid today for these complications, significant savings might also be achieved. Just how significant, we learned as the model unfolded, as described further in this paper.

All of the cushions we built into the ECR™ construction are critical to the acceptability of the program by providers who are rightfully suspicious of the validity of claims data as a source of information about actual costs in rendering care. The best iteration of PROMETHEUS Payment® rates would reflect real data on true provider costs. Until such data are available, we have to start somewhere.

One might argue that this inaugural methodology to an ECR™ is impure to the goals of the project—pay for what the CPG says should be done; yet this approach to ECR™ construction explicitly removes excess care and overuse caused by preventable errors, starts with a scientific basis as modified by empirical reality, and provides additional payment to providers for the right services, shifting it from monies currently spent on potentially avoidable complications. Together the design elements create a strong incentive for providers, even in the early years, to do the right things for the patients, but just as much as they really need. As we will see going forward, patients don’t get sick in accordance with the simple statements often present in CPGs and the complexity of the science of medicine demands, and patients deserve a more flexible, yet refined calculation to pay for their care.

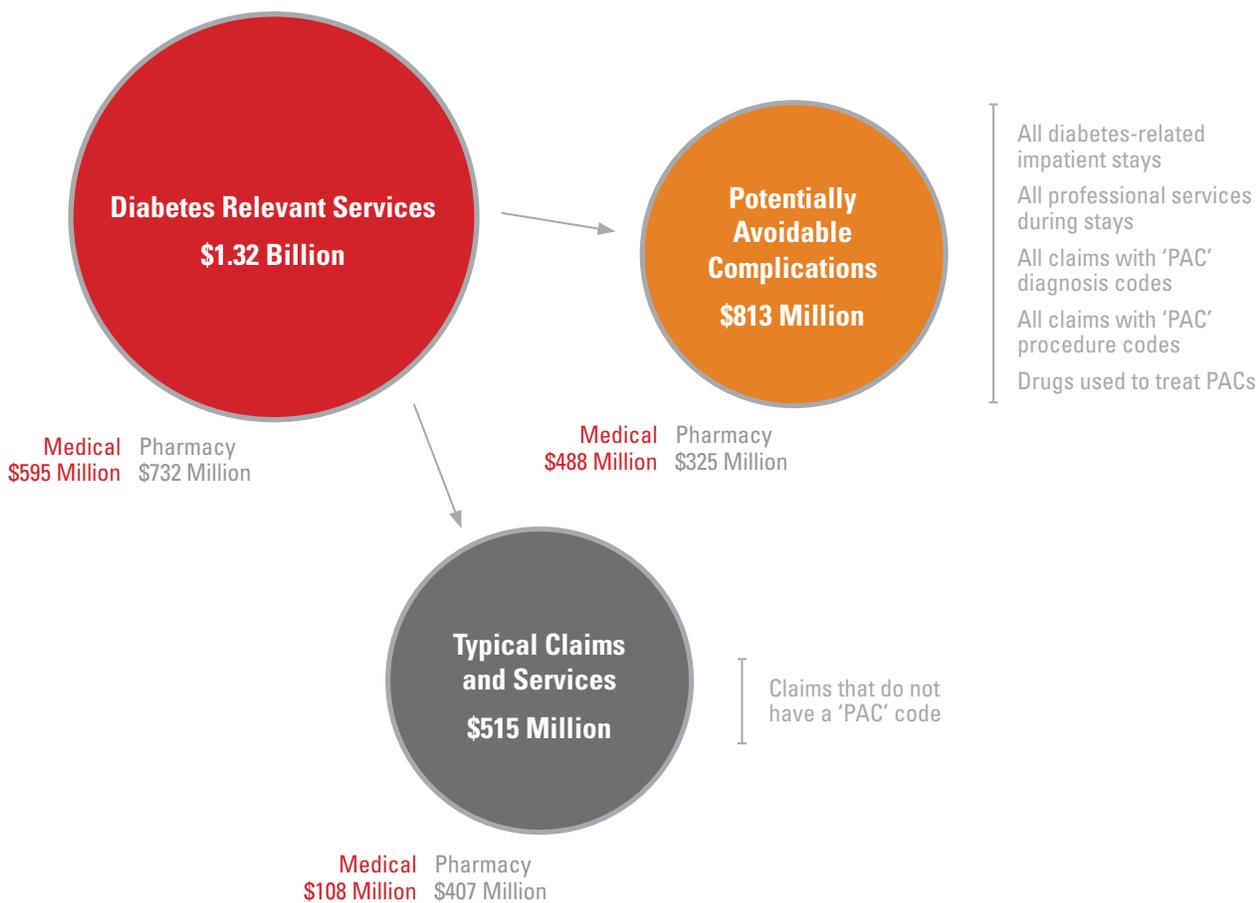
## Finding The Core Services

In approaching the development of actual rates, we explicitly chose to first model conditions primarily treated medically, as opposed to those treated primarily surgically. Although a surgical admission could serve the purpose of providing a basis on which to develop our modeling techniques, most payment systems in existence today already pay for surgical services on a case rate, although the payment amounts to surgeons versus the hospital or surgical center are disaggregated and driven by different methodologies. Others who are also developing new payment approaches have begun with surgical care. While the PROMETHEUS Payment<sup>®</sup> methodology will be used on surgical conditions, to develop a truly breakthrough method, we decided that the complexity of using medical conditions would provide a better foundation for the template for ECR<sup>™</sup> construction. We began with a primarily office-based chronic condition—diabetes—to demonstrate with enormous clarity the real difference this program would offer to primary care physicians. We then developed a medical hospitalization rate to show how both physicians and hospitals would be affected by the new methodology.

### 1. DIABETES

The first challenge was to identify the typical diabetes case or cases to form our base ECR<sup>™</sup>. These would have to include non-insulin dependent diabetics, insulin-dependent diabetics, and both either controlled or uncontrolled. We would take into account claims over a year of care and develop an ECR<sup>™</sup> to pay for a year of care for these patients. With those parameters in mind, using a multivariate analysis, we removed from the data incorporated in the ECR<sup>™</sup> irrelevant procedures, such as knee and gynecological procedures among about a dozen categories and irrelevant co-morbid conditions including cancer, HIV and pregnancy, for example. Most significantly we removed from the rate calculation (to be taken into account in the PAC Pool) potentially avoidable complications which included all hospitalizations, stroke, amputations, retina procedures, infections and the like. Do these occur in patients who are well cared for? They do. But high-quality diabetic care should prevent many of these complications. In Figure 2, we see the extraordinary amounts of money, just in our databases, spent on these complications.

Figure 2. **Cost Distribution: Typical v. Potentially Avoidable Complications in Diabetes**



To quantify the costs for typical, non-complicated cases, we took into account the types of services, their utilization and average prices as demonstrated in the databases. Patients without co-morbidities were isolated from those with co-morbidities who would also have to be taken into account as part of the typical patients included in the base ECR™. Going back to what the ECR™ Working Groups had identified as appropriate services contained in the CPG, the database also showed there was a significant amount of underuse. Patients in the database were not getting the full constellation of services the CPG called for. Had we taken only the data from the database, Patient 1 in Figure 3 would have only been eligible for an ECR™ payment of \$311 for a year of care, and either would not have gotten all the care recommended, or her physician would be losing money. To truly take into account what science called for, we had to ‘rebase’ the ECR™ to add back services and drugs called for by the Working Groups. When the services were rebased, the ECR™ payment for all patients increased by \$1000!!!



In Figure 3, Patient 1 is a typical controlled adult diabetic patient, non-insulin dependent, getting few other drugs, being treated in the physician's office with no complicating factors. Still the payment for this patient, which includes pharmacy, would increase typical payments today to primary care physicians for these services by a considerable amount—to more than \$2,300 a year! Patient 2 on the other hand, while also typical, is insulin dependent but also receiving statins, ACE inhibitors, beta blockers, is over 65, and has some eye diagnostic procedures, basic office visits and more laboratory services. That patient's care is eligible for \$3,100 more payment in a year in comparison with Patient 1. Patient 3's care is eligible for more than two and a half times that payment (\$14,264), because he is insulin dependent, his diabetes is uncontrolled and he is on statins and other lipid lowering drugs, antihypertensives, anti-depressants and has hyperlipidemia with obesity. In addition, he has had an eye procedure and is getting home health services. These are all very typical diabetic patients, yet their resource consumption varies almost six-fold when appropriate science-based care is provided and payment takes into account the severity of their condition and the drugs and procedures prescribed for these.<sup>9</sup>

Figure 3. **Diabetes Costs Per Patient After Re-Basing**

	Factors	Avg. Cost	Number	Total Cost
Total DM Cases		\$6,076	218,541	\$1,327,855,116
Claims for Typical Patients		\$3,002	171,631	\$515,236,262
Claims for Patients with PACs		\$6,685	121,576	\$812,735,560
Added Burden for PACs		\$6,685		\$812,735,560
Evidence-Informed Adjustment (Adjustment for Underuse)	90%	\$957	154,462	\$147,879,761
Allowable Cost of PACs	50%			\$332,427,899
Flat Fee Portion (spread 25% costs of compl over all cases)	25%	\$380		\$83,106,975
Proportional Rate (75% of compl costs as a rate over base costs)	75%			38%
	Factors	Patient 1	Patient 2	Patient 3
Cost of Care of Typical DM Case (severity adjustment models)		\$311	\$2,453	\$8,375
Cost of Care of Typical DM Case (after rebasing on CPGs*)		\$1,317	\$3,459	\$9,381
Allowance for PACs		\$881	\$1,695	\$3,945
Flat Fee Allowance (25% of compl costs spread over all)	\$380	\$380	\$380	\$380
Proportional Allowance	38%	\$500	\$1,315	\$3,565
Margin	10%	\$132	\$346	\$938
Margin Plus Allowance for PACs		\$1,012	\$2,041	\$4,883
Net Percent Allowance for Margin Plus PACs		77%	59%	52%
<b>Total ECR per Patient (severity-adjusted + margin + Allowance for PACs)</b>		<b>\$2,329</b>	<b>\$5,500</b>	<b>\$14,264</b>

<sup>9</sup> It is apparent that to produce an ECR™ in this way is very complex in light of the fact that while this slide shows three different patients, there are millions of variables. The good news is that the analyses are now easily replicable and the approach does not require identification of every possible combination of patient factors.

The PAC Pool is an allowance for potentially avoidable complications, to be added to every case, and at the same time, create a powerful incentive to reduce the complications. This payment to providers will both offset the actual cost of those complications when they do occur and provide an additional margin for those providers who reduce or eliminate them. Initially, the PAC Pool will be set at 50 percent of the total current costs of all potentially avoidable complications, and the actual amount per patient will be determined by allocating to each case a flat fee at 25 percent of the total pool and a proportional rate as illustrated in Figure 3, with the 75 percent proportional amounts reflecting the complexity of the patient's condition, so severity is appropriately accounted for in the base rate. The amount to be allocated proportionally is established by first calculating the amount of the PAC Pool (25 percent) which will be allocated across all the cases. In Figure 3, this amount is \$83,106,875, divided by the number of cases (218,702) yielding a flat rate for each diabetes ECR™ of \$380. The 75 percent remainder (\$249,320,924) is allocated proportionally based on a percentage, which is derived by dividing that remainder by the total of all potential typical episodes in the population ( $218,541 * \$3,002 = \$656,060,082$ ). In Figure 3, the result of that calculation yields 38 percent ( $\$249,320,924 / \$656,060,082$ ). The use of a mixed model for calculating the PAC allowance should avoid the tendency either to select healthy patients (which is what a pure flat fee add-on would encourage), or conversely, to systematically upcode the severity of the patient (which is what a pure proportional rate allocation would encourage).

With underuse accounted for, plus margins, with the PAC Pool added, the resulting payment is much higher than the database alone would have generated. Even with these considerable increases in payments, because of the enormous amount of money that is paid today for potentially avoidable complications, there would still be massive savings by comparison with today's outlays—savings in the amount of more than \$300 million—from one database and for one clinical condition. This savings demonstrates a dramatic difference in this science-based payment model, namely that when proper standardized care is rendered, taking into account today's significant underuse, overall savings are remarkably large, while provider payment per properly treated patient increases substantially. This speaks directly to the business case that the PROMETHEUS Payment® model offers to all stakeholders. Similar effects are found in modeling for a hospitalization for acute myocardial infarction.

## 2. AMI HOSPITALIZATION

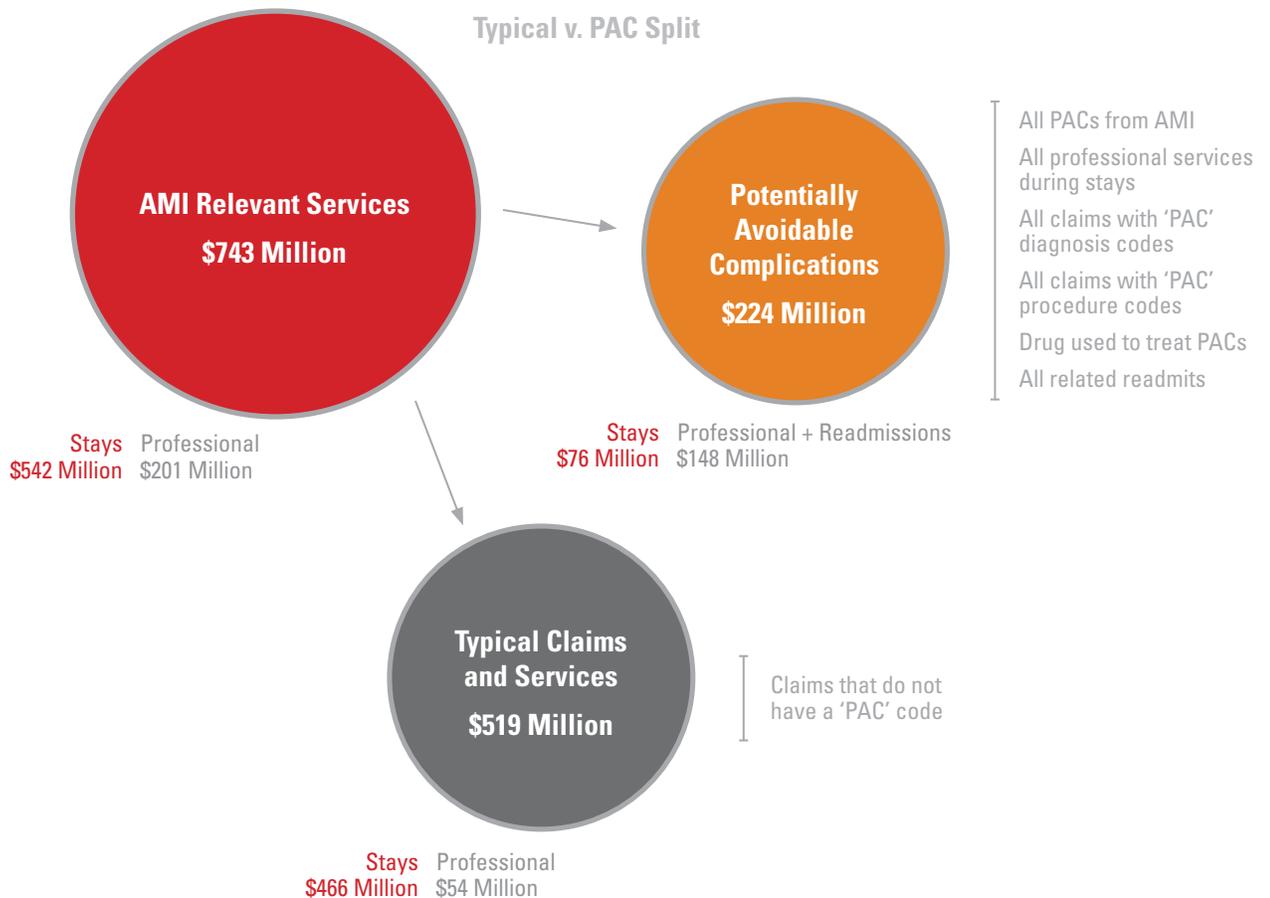
We began looking at the simple issue of a hospitalization for AMI. Here, the time boundary issues are different. Although one would think that determining a hospitalization beginning and end would be straightforward (admission and discharge), in fact, to create an ECR™ which is intended to prevent complications and enhance care, while paying a full and fair amount to both the hospital and the clinicians, the timeframe is not merely admission and discharge. The professional services have to take into account services within three days prior to admission to incorporate the outpatient workup, ambulance transport to the hospital for emergency admissions, those services and pro-

cedures during the admission, and those 30 days post-discharge which relate to the same condition, including cardiac rehabilitation. All are included in the AMI ECR™.

The varying costs of AMI hospitalizations were subjected to additional variable analysis. First there were issues of co-morbidities, then technical complications and then, markers for disease progression.

Risk factors for these purposes were age at admission, gender, race, patient and hospital location, admission weekday or weekend, admission type (elective or emergent), admission source (emergency department or another hospital) and discharge disposition. For co-morbidities, the data was grouped based on secondary diagnosis codes into three major categories: (1) irrelevant secondary codes (such as pregnancy) or major surgical procedures unrelated to the AMI, such as major abdominal surgery; (2) technical risk codes, which included potentially avoidable complications of medical care, such as complications of implanted grafts, devices, urinary tract infections, decubitus ulcers,

Figure 4. **Typical Expenditures for AMI and Costs of Potentially Avoidable Complications**



infections, and adverse drug events; and (3) case breakers, which included procedures such as CABG or dialysis, which made the case so atypical it represented two or more clinical conditions and went beyond the boundaries of AMI.

Like the diabetes care, when the claims were analyzed to isolate potentially avoidable complications, the volume of expenditures for those services was impressive, as can be seen in Figure 4.

By filtering the data to incorporate only the services typically rendered for AMI given individual patient co-morbidities, and excluding irrelevant conditions, procedures and other issues which were anomalous for our purposes, a multivariable model for core AMI cases could be developed. In interpreting the data, as with the diabetes ECR™, it became possible to identify the dollars associated with typical patients receiving core AMI care, but still widely variable within the norms of good CPG-based care. To capture all of the professional services relevant to both the hospitalization itself and across the time continuum we had defined as three days before the hospitalization for diagnostic workup and 30 days after for continuing care. Because AMI is often an emergency admission, there is often not much to include in this calculation. For the hospitalizations identified as typical, we identified the associated professional claims by selecting for the same patients and the same diagnosis codes from the hospital claims to find claims reflecting professional services. In addition to the obvious inpatient professional services though, we also took into account outpatient care during the 30-day, post-discharge period for related services, such as cardiac rehab and outpatient drugs. Readmissions for related diagnoses were considered potentially avoidable complications, and the dollars associated with those services were allocated to the PAC Pool, both facility and professional fees. Figure 5 shows data similar to the diabetes analysis involving three typical, but quite different patients.

Patient 1 is a hypothetical typical male patient, 50-65 years old, who was admitted to the hospital with an AMI, but has no additional risk factors. The facility charges for patient 1 are \$10,300 and those for professional services are \$700; yielding a total base price of AMI care of close to \$11,000. This example could be considered a base case scenario. Patients 2 and 3 represent two typical patients of AMI with varying degrees of severity at presentation of AMI through the emergency room. Both have various procedures performed, and drugs administered to treat their AMI, but only Patient 3 has a percutaneous transluminal coronary angioplasty (PTCA). As Figure 5 demonstrates, using the facility and professional risk-adjustment models, the severity-adjusted base prices could range from the simplest, uncomplicated case for Patient 1 for \$10,268 for the hospital and \$689 for physician and post-hospitalization outpatient services to Patient 3 where the hospital costs are eight times higher (\$86,567) and professional and outpatient care is \$33,478.

Figure 5. **Typical AMI Costs – Facility and Professional**

RISK-ADJUSTED ECR COSTS Regression Models "Typical"	AMI Facility Model		AMI Professional		Patient 1		Patient 2		Patient 3	
	Count	Estimate	Count	Estimate	Facility	Prof	Facility	Prof	Facility	Prof
Intercept	3,665	9.2367	6,999	6.5358	1	1	1	1	1	1
P3: Diagnostic Cardiac Catheterization, Coronary Arteriography	2,381	0.5151	2,159	0.5491			1	1	1	1
P24: Other Diagnostic Procedures (interview, evaluation, consultation)	326	0.1805	3,470	0.3987			1	1	1	1
P32: Emergency Room	2,254	0.1913					1		1	
P19: Blood Transfusion	158	0.2194					1		1	
P26: Physical Therapy and Rehabilitation	932	0.1399					1		1	
M15: Coronary Atherosclerosis and Other Heart Disease			3,006	0.1305				1	1	1
P7: Non-Invasive Cardiovascular Studies			3,107	0.3150				1		1
P21: Laboratory Services			1,263	0.1635				1		1
PH1: Insulin			172	0.1589				1		1
PH5: Beta Blockers			2,609	0.0979				1		1
PH6: ACE or ARB inhibitors			1,924	0.0705				1		1
M12: Essential Hypertension			1,350	0.0651				1		1
P28: Medication Administration			372	0.2263				1		1
P23: Radiology and Radionuclear Diagnostic Services			759	0.1856				1		1
P22: Microbiology			180	0.1172				1		1
P2: PTCA, Thrombolysis	1,793	0.7918	1,624	0.4584					1	1
M16: Congestive Heart Failure; Nonhypertensive	697	0.0940							1	
P27: Ancillary, Home Health, Transport			1,601	0.3399						1
P4: Cardiac Ablation, Pacemaker or Cardioverter/Defibrillator			70	0.2581						1
PH12: Bronchodilators and Mast Cell Stabilizers			257	0.1061						1
M22: Other Respiratory Infections and Diseases			1,256	0.0902						1
M18: Diseases of Arteries; Arterioles; and Capillaries			837	0.0767						1
P13: Respiratory Diagnostic and Minor Therapeutic Procedures			2,731	0.0754						1
<b>CHARGES FOR EACH PATIENT BY FACILITY / PROFESSIONAL</b>					\$10,268	\$689	\$35,699	\$8,216	\$86,567	\$33,478
<b>TOTAL SEVERITY ADJUSTED BASE PRICE OF ECR™</b>					<b>\$10,957</b>		<b>\$43,915</b>		<b>\$120,045</b>	

The PAC Pool allowance for the complications for AMI patients, takes into account conditions such as hemorrhage, stroke, shock, respiratory complications and another 8-10 conditions. Figure 6, shows the allocation of the PAC Pool for the AMI hospitalization, the professional and outpatient fees and the 10 percent margin.

Figure 6. **Calculation and Application of the PAC Allowance**

	AMI Facility				AMI Professional			
	Factors	Patient 1	Patient 2	Patient 3	Factors	Patient 1	Patient 2	Patient 3
Cost of Care of Typical AMI Case		\$10,268	\$35,699	\$86,567		\$689	\$8,216	\$33,478
Allowance for PACs		\$1,020	\$2,233	\$4,659		\$1,682	\$5,587	\$18,695
<i>Flat Fee Allowance</i>	\$530	\$530	\$530	\$530	\$1,324	\$1,324	\$1,324	\$1,324
<i>Proportional Allowance</i>	5%	\$490	\$1,703	\$4,130	52%	\$358	\$4,263	\$17,371
Margin	10%	\$1,027	\$3,570	\$8,657	10%	\$69	\$822	\$3,348
Sub-total ECR™		\$12,314	\$41,501	\$99,883		\$2,440	\$14,625	\$55,521
Total ECR™ per Patient (severity + PAC allowance + margin)		Patient 1 \$14,754	Patient 2 \$56,127	Patient 3 \$155,404				

Similar to the diabetes care, the comparison between the base amounts found in the claims and the final ECR™ shows the power of the cushions we have built into the severity-adjusted AMI ECR™ base rates. The facility payment for the simplest case with the PAC Pool and 10 percent margin went from \$10,268 to \$12,314, and on Patient 3 went from \$86,567 to \$99,883. For the physician and outpatient care, the effect is even more dramatic. The payment for the simplest case rose more than three-fold to \$2,440, and the most complicated patient's ECR™ rose by \$22,000 to \$55,521. Like the striking effects for diabetes, the ECR™ for AMI would add significant dollars to provider payment, while saving in the first year, \$112,209,657 not spent on potentially avoidable complications.

### 3. ANALYSIS

The effect of the focus on potentially avoidable complications was stunning to the Design Team. In our early thinking, we were concerned as to whether the model could even be said to be budget neutral. At least in the early years, because of the size of projected savings on one hand and the availability of half that money to allocate to the providers, the PAC Pool, will substitute for the 10 percent and/or 20 percent Performance Contingency Fund. If our model changes behavior so complications are indeed avoided, the PAC Pool will shrink. When that money allocable to providers is less than the 10 percent or 20 percent Performance Contingency Fund, we will apply that mechanism.

To create a fair and complete ECR™ (and validate our approach) requires, at this stage, an analysis of each case-type paid this way in order to appropriately understand the actual evidence-informed pathway taken by the patient, evaluate the severity of that patient and determine the total cost of the ECR™, including the PAC Pool. Over time, as hospitals and physicians develop experience with managing care in accordance with



what ECRs™ motivate, we expect they will be able to develop their own ‘fully-loaded’ ECR™, by patient or groups of patients, and negotiate those with payers. Today, PROMETHEUS Payment® rates begin with our internal development process.

Having delved into the data though, the limitations in using claims data also had an effect on the feasibility of modeling the initial conditions we had selected. Because of the difficulties in isolating staged cancer cases, as well as finding depression and preventive services in claims data, we have shifted the focus in our initial modeling efforts to five additional chronic illnesses: (1) congestive heart failure; (2) chronic obstructive pulmonary disease; (3) asthma; (4) coronary artery disease; and (5) hypertension. For surgical/procedural diagnoses we will address: (1) hip and knee replacements; (2) coronary artery bypass graft; (3) coronary revascularization heart catheterization; (4) bariatric surgery; and (5) hernias. This starter set will provide good opportunities to improve care and save money in the pilot sites.

## Early Equitable Protections

To do this analysis and calculation for many conditions with many complications, adding in other services and post-discharge care, is unquestionably complicated. There is a good chance we will find that we have not targeted an ideal rate, but we have to start somewhere and learn where our assumptions are wrong.

We know full well that the early iterations of PROMETHEUS Payment® case rates and the implementation of the program will evolve over time. The purpose of the Robert Wood Johnson Foundation grant is to learn what needs to be fixed. The short-term version of the PROMETHEUS Payment® model will be different from its full manifestation.

There are risks in the early implementation of the model. It is unfair to ask providers to assume all the risk of a very different payment model when its underlying principles have not yet been proven. Several protections have been built in for pioneer adopters.

- (1) In the first year, while PAC Pool money will be held in reserve to incentivize appropriate care, there will be no penalty assessed for bad performance, and the full PAC Pool will be returned in accordance with the scorecard results.
- (2) The withholds to create the Performance Contingency Funds were originally intended to be 10 percent on chronic care and 20 percent on acute care, but those differentiations are too complex to assess now; so, the withholds when introduced will be 10 percent for physicians and ancillary providers, and 20 percent for hospitals and other facilities. Even after the PAC Pool dwindles, providers should be able to realize improved margins under this model because of the cushions which accommodate clinical risk, but do not reward for overuse of unnecessary services or for higher than average complication rates. Efficient providers, who are resourceful within the cushioned rates, will make money. The mechanism though, will be held in abeyance until the PAC Pool dwindles.

- (3) In many instances the PAC Pool allocation may actually exceed the amount otherwise withheld in the Performance Contingency Fund so, where it is higher than the 10 percent or 20 percent that would otherwise be withheld, the PAC Pool allocation will constitute the Performance Contingency Fund amount. Providers will still be scored, and the PAC Pool money will be paid pro rata based on scores.
- (4) In the first year, the top quartile of performers will not be paid the bonus that will be available when the Performance Contingency Funds are distributed pro rata.
- (5) While some of the benefits of the administrative burden reduction will be found in a prospective payment model where the providers get a portion of their segment of the ECR™ paid monthly, the risk of error in the construction of the ECR™ is too great, so initial implementation will be based on fee-for-service payment to physicians at the same rates they are currently paid. Over time, with greater certitude, the prospective payment model will emerge.

## Conclusion

The methodology for constructing ECRs™ today does not demonstrate the full potential of what the Design Team believes the new payment model can produce. The cushions that are built into science informed services aggregations protect providers from the perversities of using a claims database to begin. We were astonished, however, to see in the data (such as that associated with diabetes) how much improvement there might be in payment to physicians in particular, especially those in primary care, when science-based care is adequately compensated. The difference between the \$311 dollars we found in claims data for treatment of the non-insulin dependent controlled diabetic, compared to the \$2,329 that would be provided under our model because we rebased for science-based care, added the cushions we have designed because of our need to start somewhere, is remarkable. These dollars would permit primary care physicians to support the kinds of infrastructure, communications and interactions they need to help patients be compliant and engaged in their care and avoid the very complications the PROMETHEUS Payment® model seeks to prevent. The current system does not accommodate these efforts at all; but if what we have designed were widely adopted, the savings to the system in terms of all dollars spent would be enormous.

While the diabetes case is astonishing in terms of dollars allocated to providers and saved, the more than \$112 million saved on AMI is just as impressive. Because of the power of the effect of the focus on allocating PAC Pools to providers while saving phenomenal amounts of money is so important, we will highlight both the savings and allocations of PAC Pools as we proceed to develop more ECRs™. These effects speak eloquently to the needs of the providers on one hand and the payers on the other. Over time, the measurement of these savings will dissipate as care improves among larger populations paid for this way, but we are encouraged that what will be paid for is the right care for the right patient in the right setting, avoiding complications which should not occur when the right care is rendered.