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Building the Affordable Medical Home

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Abstract: Medical homes and accountable care organizations have become the great hope for many health industry stakeholders and policy makers seeking to reconstitute fragmented healthcare delivery within a coordinated cost-conscious framework. The need to increase coordination has been evident to analysts for many years and, in the past, has resulted in developments such as capitation and disease management. The hope of these reforms is that through changes in risk/reward to providers or by layering in external programs to improve patient coordination the system will improve patient outcomes and reduce total cost. This article describes a pilot project to create a medical home that is built upon changing existing payment incentives but tying these incentives directly to the outcomes of care experienced by patients. It is at variance with most proposals to create medical homes in that it is self-funded, allowing rapid scaling, and is largely agnostic toward the precise practice pattern employed. Put succinctly, it encourages practice patterns that improve patient outcomes without dictating what they should be. **Key words:** *capitation*, *medical home*, *pay for performance*, *primary care physicians*

THE US health system encourages waste because of a lack of coordination among providers (Gold & Felt-Lisk, 2008). In response, payers have implemented many delivery reforms requiring extensive change in the ways providers are paid and organized (Fisher et al., 2009; Goldfield et al., 2008b). These changes are particularly important for primary care physicians (PCPs) as fewer medical students are choosing this profession both for reasons of lifestyle and for the relatively low pay in comparison with other specialists. Policymakers have responded by implementing the Patient Centered Medical Home (PCMH). While there is no consensual definition of a PCMH (Iglehart, 2008), there is a desire to place the patient, and thereby patient needs, at the center of care. Shifting the business of medicine toward patient-centeredness requires a major cultural change away from the established model of provider-centric care and payment (Schall et al., 2009). A shift in culture is necessary but not sufficient if the PCMH is to be successful; the cultural shift also requires an increase in PCP payment and the way in which patient information is both transmitted between and reacted to by physicians and their patients.

The purpose of this article is to report on a pilot project to build a medical home in the existing payment landscape without requiring extensive organizational changes. The pilot focuses on 3 interrelated pillars: payment, information, and patient outcomes.

OBJECTIVES

Successful PCMH implementation will increase care coordination, improve patient outcomes, and thereby reduce patient costs. For the PCMH implementation to be a success, measures for evaluating results should be both transparent and quantifiable for all participants.

A successful pilot is therefore defined as

1. delivering quantifiably better health outcomes,

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2. reducing resource utilization,
3. increasing payment for efficient PCP, and
4. offering financial sustainability such that a payer may rapidly expand the pilot.

Achieving these objectives requires navigating the existing payment landscape. Within the pilot project, enrollees are split between Administrative Services Only (ASO) and full-risk arrangements with a provider network diverse in type, location, and size. PCP services are currently paid using fee for service (FFS) contracts based upon Medicare's Resource Based Relative Value Scale (RBRVS). This is a typical payment landscape. Also, in keeping with the general experience, a number of preceding initiatives have attempted to achieve similar objectives as specified above for the PCMH pilot. Chief among these was the introduction of an external entity providing disease management services. To date, these initiatives have not demonstrated the desired improvement in patient outcomes and lower costs. This experience is in keeping with general results (Peikes et al., 2009). It is within this framework that the pilot project is being implemented.

PRACTICE REFORM

Changing the way medicine is practiced requires complementary changes to both payment incentives and informational infrastructure. For the pilot project, it was required that there be a clearly documented plan to transform participating PCPs into PCMHs; however, the detail within the plan was left to the PCPs. One example of a transformational system, made available to PCPs, is the Ideal Medical Practice (IMP) model (Wasson et al., 2008). The IMP model focuses on the experience and perception of the patient, both in terms of care received and the patients' estimation of how they can manage their illness. Standardized information, obtained from the patients, grants physicians insight into how well they are managing their patients' care. Data supplied by patients, such as the level of patient confidence in self-management, is known to act as a strong predictor of future adverse outcomes and can be used to target preventative resources (Shoor & Lorig, 2002).

One of the most perplexing design questions in PCMH initiatives is how to match patients to their responsible physicians. The chronically ill offer the greatest opportunity to benefit from increased coordination due to the frequency and severity of interactions with the healthcare system. Because of the complexity of chronically ill patients, however, numerous physicians impact their care and may in turn face unwanted risk that may result from changes to patient health. The payment model designed here allows physicians to identify patients for whom they wish to assume control. By making the performance improvement payment (PIP) an additive enhancement to existing pay, and dependent upon utilization reduction, the underlying payment system remains untouched. It is not necessary to place each patient within a medical home on day 1. The system can evolve to determine where patients fit best without having to assign patients to physicians based upon preset rules with which they may disagree. At the same time, transparent risk adjustment as described below is necessary if the PCMH implementation is to avoid adverse risk selection.

PREVENTABLE COSTLY EVENTS

The rationale for the pilot is based upon a single hypothesis. Each year patients have costly events that can be averted by PCP intervention (potentially preventable events or PPEs). By averting hospital admissions, trips to the emergency department (ED), and potentially unnecessary ancillaries (pharmaceuticals, x rays, and other tests), resources will be freed. In return for freeing up these resources, PCPs can be rewarded with enhanced payment. An important underlying premise for the success of this pilot is that this information on PPEs must be available for review and agreement to the PCP down to the individual code level. Without this information there is no possibility for the PCP either to be in agreement with the list of PPEs and/or to be aware of the areas in which the PCP can improve.

Based upon this working hypothesis the first step was to quantify in precise terms what may be preventable. If the finished product will share gains from improved performance, both providers and payers need to know in advance how change is translated into payment. Not all inpatient admissions or ED visits can be averted by a proactive PCP. The focus of this pilot is to reward PCP interventions that reduce costly events, those hospital admissions and ED visits potentially sensitive to increased coordination in ambulatory care. In addition, certain interventions (eg, a bypass graft) may not be avoidable in year 1 but could be avoidable by year 3 in a patient-centered practice. A starting point is, therefore, to define those events that can potentially be impacted by PCP intervention. Having defined the type of events that can be prevented, it is not expected that, even with the very best care, all events will be. These events are therefore defined as potentially preventable admissions (PPAs) and potentially preventable ED visits (PPVs). These PPEs are classified by clinical grouping algorithms whose detail can be examined/approved by anyone, including PCPs, payers, and patients. Potentially preventable events consist of the following:

- Potentially preventable outpatient ancillaries ordered in either the PCP or the specialist office to whom the PCP has referred the patient (eg, MRI).
- Potentially preventable ED visits (PPVs) together with associated ancillaries.
- Potentially preventable admissions (including initial admissions and readmissions) or PPAs.

ED visits were classified using Enhanced Ambulatory Patient Groups (EAPGs) (Goldfield et al., 2008a) and inpatient admissions were classified using All Patient Refined Diagnosis Related Groups (APR DRGs) (Averill et al., 2002).

Examples of the ambulatory-sensitive admissions and ED visits are shown in Tables 1 and 2. Although 227 ambulatory-sensitive EAPGs were defined for ED visits within the EAPG classification system, payer data indicates that 75% occur within the 15 listed in Table 2.

Table 1. Ambulatory-sensitive admissions

All patient refined	Description
53	Seizure
54	Migraine and other headaches
113	Infections of upper respiratory tract
137	Major respiratory tract infections and inflammations
138	Bronchiolitis and respiratory syncytial virus pneumonia
139	Other pneumonias
140	Chronic obstructive pulmonary disease
141	Asthma
191	Cardiac catheterization with circulatory disorders excluding ischemic heart disease
192	Cardiac catheterization for ischemic heart disease
194	Heart failure
198	Angina pectoris and coronary atherosclerosis
199	Hypertension

To compare PCP performance, the observed frequency of PPAs and PPVs require risk adjustment to account for patient mix. Patient-level risk adjustment was introduced through a third classification system, Clinical Risk Groups (CRGs) (Hughes et al., 2004).

CRGs group patients into mutually exclusive categories of illness severity, based upon multiple comorbidities and conditions. CRGs were used to classify the 1.5 million members reviewed for the pilot project, with results shown in Table 3. For display purposes, CRG classification is consolidated within 3 groups: healthy/minor chronic; members with a single significant chronic disease; and those with multiple significant chronic diseases. These groups serve as aggregations within which members have similar resource utilization patterns. However, the potential for adverse risk selection is ever present. Unlike other risk adjustment systems, the CRG system

Table 2. Ambulatory-sensitive emergency department visits

Enhanced ambulatory patient group	Description
530	Headaches other than migraine
553	Level I ophthalmic diagnoses
573	Community-acquired pneumonia
628	Abdominal pain
657	Lumbar disc disease
531	Migraine
562	Infections of upper respiratory tract
564	Level I Other ear, nose, mouth, throat, and cranial/facial diagnoses
576	Level I Other respiratory diagnoses
627	Nonbacterial gastroenteritis, nausea, and vomiting
673	Cellulitis and other bacterial skin infections
674	Contusion, open wound, and other trauma to skin and subcutaneous tissue
675	Other skin, subcutaneous tissue, and breast disorders
727	Acute lower urinary tract infections
871	Signs, symptoms, and other factors influencing health status

significantly mitigates against the possibility of adverse risk selection by adopting a categorical clinical model allowing payers, PCPs, and even consumers to understand exactly how each patient is classified.

It can be seen from Table 3 that, as projected, the chronically ill comprise the highest dollar spend per member and also the greatest percentage of charges for PPAs and ED visits.

Table 3 shows that 4.82% of total spending could potentially be averted by PCP intervention. It is this pool of money ($200 million) that can be freed up to incentivize changing practice patterns. This pool does not include potentially preventable ancillary services that are ordered by either the PCP and/or the specialist.

Figure 1 shows the source of potentially preventable savings. The single largest source of preventable dollars is generated by those patients with multiple significant chronic conditions particularly their associated hospitalizations. It can also be seen that significant dollars can be freed by reducing the frequency of ED visits for preventable events for the healthier population. It is worth emphasizing that potentially preventable outpatient dollars include only PPVs and associated ancillaries.

PAYMENT MODEL

After grouping patients within a CRG, an expected frequency of PPAs and PPVs is calculated for each PCP's patient population projected from the frequency observed across all PCPs. In this way, the frequency of PPVs and PPAs observed in historical claims data for a given patient mix serve to quantify the "potentially" in potentially preventable.

To assess how well a PCP is performing requires reports detailing the type and frequency of PPAs and PPVs. These reports are to be supplied at the patient and network level. In this way, an individual patient can be monitored for the utilization by a PCP within a reference level for similar patients treated by a PCP within the practice and across the network of all PCPs. Patient benchmarking is a powerful tool through which successful behavior can be identified and replicated. This is particularly true if payment incentives are directly aligned with improvements in benchmark performance (Goldfield et al., 2009).

The payment model can be broken down into 3 parts that are recombined to make a single payment. Each part constitutes a separate evolution to the existing structure that can be introduced sequentially, at once, or not at all. While a complete path to full payment transition is mapped out, in the initial stages of the pilot, PCP payment will be based upon the standard fee for service model.

Table 3. Preventable dollars by patient type

Description	Members	Total paid	Preventable paid	% Preventable
Healthy/minor chronic	1229078	$1 523 502 241	$55 674 802	3.65
Single significant chronic	202 811	$896 450 788	$37 307 832	4.16
Multiple significant chronic	133 590	$1 681 002 114	$104 558 404	6.22
Total	1 565 479	$4 100 955 143	$197 541 038	4.82

- Visit Payment (VP) based upon EAPG and CRG intensity.
- PIP—for averting PPEs; the PIP payment is based upon historical performance in averting PPEs.
- Per Patient Case Management Payment (CMP).

Currently, office visit PCP payment is differentiated by evaluation and management (E&M) codes that rely upon the physician's determination of effort for that visit rather than directly observed patient characteristics or outcomes. Under the E&M approach, there is no payment for averting future costs and/or improving patient outcomes.

Standard Fee for Service:
Payment = Base Rate × Resource-Based Relative Value Units (RBRVU) per Service
Pilot Payment Model:
Payment = VP + PIP + CMP
where
VP = Base Rate × EAPG × CRG Intensity

The pilot payment model allows the substitution of the existing standard FFS model, the exclusion or increase of a CMP, and the inclusion of a self-funding PIP as an add-on.

The VP offers a path from the straight FFS based upon physician effort to a bundled payment based upon patient characteristics. Each patient is assigned a CRG based upon his or her own historical claims data. The CRG stratifies each patient in terms of his or her relative complexity. New patients would be added at a CRG intensity factor equal to the practice average until sufficient historical claims data become available. Services provided by the physician, that is, an office visit, are classified by EAPGs and adjusted by the CRG intensity factor specific to the patient. EAPGs are constructed to allow the bundling of services

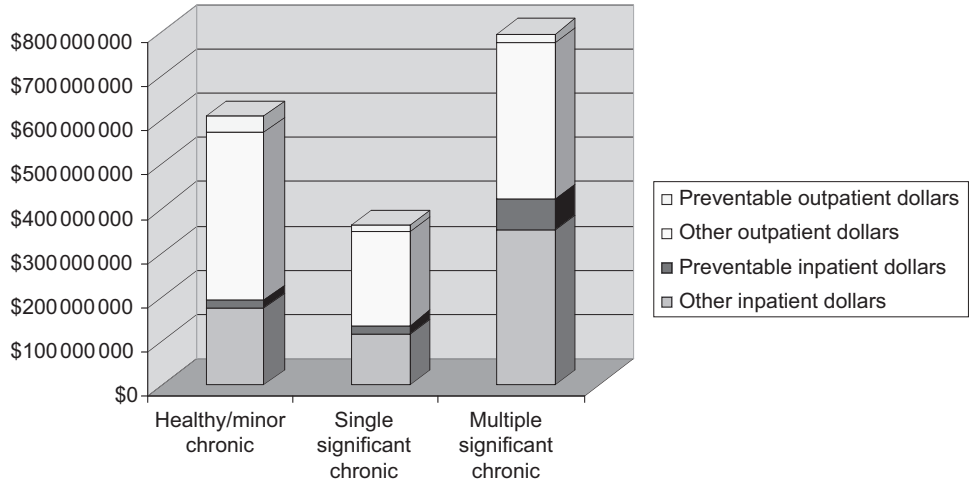

Figure 1. Source of preventable savings.

surrounding the visit, thereby creating a series of flexible payment bundles to accommodate various physician payment arrangements from full capitation to limited bundling of physician-owned ancillary services (Goldfield et al., 2008c).

The CMP is paid at a practice level. The average patient CRG intensity factor is used to generate a per patient CMP outside of the standard encounter-based payment mechanism. The CMP does not generate directly quantifiable savings. If policymakers wish to encourage PCPs to move away from a volume/ancillary test-based encounter model to an outcomes quality and patient-centered model then upfront payment, the CMP, is needed to transition the PCP to a patient-centered model. However, the CMP payment cannot be a large sum as payers and policymakers believe that there is significant waste in the healthcare system and that, as a consequence, increased reimbursement to PCPs should come from decreased waste. Decreased waste is defined as decreased PPEs. That is why the third part of the payment model, PIP, is the principal focus of the pilot project.

Taking a base year of claims data (Y_1) each patient i is assigned to a single mutually exclusive CRG j. For the subsequent year (Y_2), all PPAs and PPVs within CRG_j are identified for all *n* patients in CRG_j. The frequency of PPAs and PPVs is then fractionalized by dividing through by the number of patients (*n*) classified within each CRG_j.

In this way, each CRG_j is associated with a combination of fractional PPAs and PPVs that would be expected to occur in a subsequent year for the average patient i within the CRG (CRG_{ij}) It is important in this calculation that the expectation of Y_2 utilization is predicted from Y_1 as an escalation in CRG intensity would otherwise predict the observed increase in utilization.

To simplify the translation of averted events into payment, use is made of relative weights for EAPGs and APR DRGs. Relative weights are constructed across all hospital services and reflect the average payment made for the event the PCP has averted. By translating the fractional events into fractional relative weights and summing, each patient and CRG combination (CRG_{ij}) in Y_1 can be assigned an expected relative weight for PPAs and PPVs in Y_2. In Y_2 the actual number of PPAs and PPVs experienced by each patient i is observed. Each PPA and PPV is assigned its associated relative weight, and the same weight is used to generate the expected CRG_j relative weights for Y_2. The sum of relative weights for actual Y_2 performance can be compared to the expected sum of relative weights based upon CRG_j. By summing the difference of actual and expected relative weight for each patient i associated with a PCP a measure of their relative performance is made.

Sequentially:

i. Patients are voluntarily attributed to PCPs.
ii. Each patient i is classified within a CRG j.
iii. An expected Y_2 weight for PPAs and PPVs for Y_1 CRG_j is calculated.
iv. The expected Y_2 weight for PPAs and PPVs for each CRG_{ij} is calculated.
v. The actual Y_2 weight for PPAs and PPVs for each patient i is calculated.
vi. The difference between actual and expected relative weight is calculated for each patient i.
vii. The sum of differences is made across all patients attributed to a PCP.

Since the objective of the pilot is to monitor change in performance, rather than absolute performance, the actual to expected comparisons will be constructed for sequential years to measure how they have changed. In this way, the historical performance period of the PCP is transformed into a prospective adjustment of payment rates rewarding the enhanced care management and coordination being provided.

POTENTIAL FUNDING FOR THE PERFORMANCE IMPROVEMENT PAYMENT

The PIP component is designed to be self-financing and capable of rapid scaling if successful. Table 4 demonstrates the scope for

Table 4. How this works for primary care physicians

	Group A		Group B	
	Number	**Payment**	**Number**	**Payment**
Members	6023		6868	
PCPs	18	$1 068 107	18	$1 159 959
Admits	408	$3 213 651	522	$4 402 985
PPAs	95	$522 564	120	$718 506
PPA%	23	16	23	16
Outpatient visits	8121	$5 635 092	9021	$6 893094
PPVs	470	$307 922	551	$369 950
PPV%	6	5	6	5
PPVs and PPAs		$830 486		$1 088 456

Abbreviations: PCP, primary care physician; PPAs, potentially preventable admissions; PPV, potentially preventable visits.

savings by comparing 2 PCP practices. Two similarly sized group practices are profiled in Table 4. Both groups are composed of 18 PCPs. Group A has 6023 members while group B has 6868. Current payments to individual PCPs average $59 339 ($1 068 107/18) for group A and $64 442 for group B. These figures represent the plans share of total PCP payment not total PCP payment from all payment sources.

The members in group A have 408 recorded inpatient admissions of which 95 (23%) are considered "potentially" preventable. Avoiding all PPAs would free $522 564 in averted medical loss to fund the PIP. In addition to the PPAs, group A members have a cost of PPVs equal to $307 992. In total, $830 486 can be generated from potentially preventable costly events. This sum is equal to 78% of the existing PCP payment level for group A. Group B can generate $1 088 456 or 94% of existing PCP payment.

Table 4 makes it clear that even a modest 10% reduction in preventables would yield $83 000 for group A and $109 000 for group B, an increment of 8% to 10% on base salary.

This raw assessment of PPAs and PPVs does not however take into account the CRG-based variation in PPEs. On the surface, the 2 groups look very similar in their ratio of preventable visits and admissions. When patient mix, defined by CRGs, is taken into consideration, the assessment of current performance and potential savings is altered.

In Figure 2, an expected expenditure for PPVs and PPAs is introduced. As previously described, this is a measure of the expected frequency and cost of PPAs' and PPVs' risk adjusted for CRGs associated with members and based upon the average experience across all members. It can be seen that the mix of patients seen by group A and group B is similarly matched in terms of the expected cost of PPAs and PPVs. Therefore, after risk-adjustment, group A is shown to avert avert more cost than group B, which is reflected in the divergence between actual PPA- and PPV-related expense.

DISCUSSION

The $200 million potential savings displayed in Table 3 do not represent the total gains that can be made from performance change. Potentially preventable outpatient ancillaries ordered by the PCP and/or specialist are not included. In addition, the absolute necessity for the PCP to adopt a patient-centered approach is not detailed here but is discussed elsewhere (Wasson et al., 2008). While the CMP payment is necessary to begin the transition to a PCMH, policymakers/payers believe that there is significant waste and relatively poor patient outcomes in our healthcare

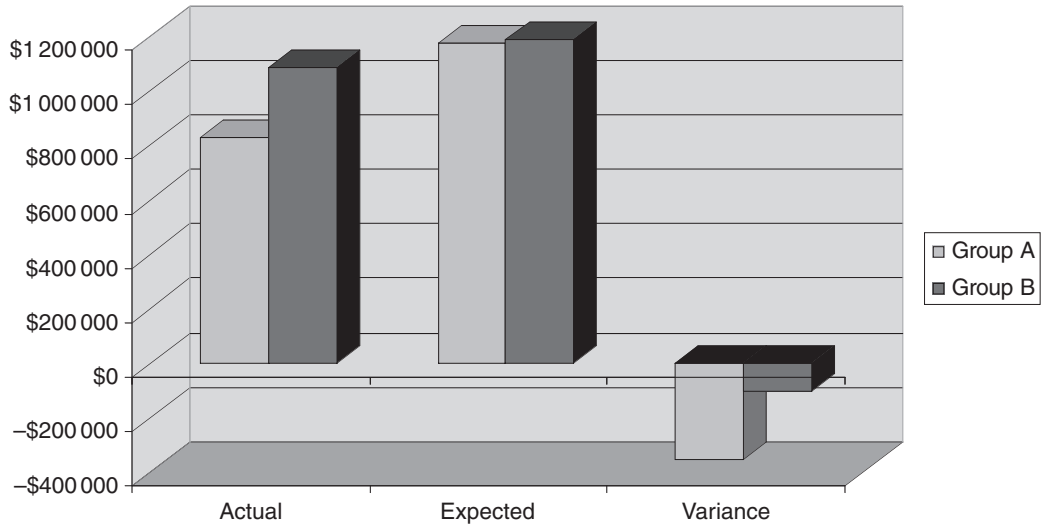

Figure 2. Clinical Risk Groups–adjusted expectations.

system. The PCMH is based on the hypothesis that a renewed PCP-patient relationship can be key to decreasing this waste and improving patient outcomes. As a consequence, this pilot project pays for improved PCP payment out of improved patient outcomes, in particular those derived from averted medical expenses. This creates a tension between reward and fairness. In the results shown in Table 4 and Figure 2, group A is already saving more for the payer than is group B. Group B can, therefore, gain a large reward purely for becoming as efficient as group A. By contrast, group A has less to gain as it is expected that it has less capacity for improvement. Any attempt to scale the pilot will require renewed focus upon rewarding current performance alongside incentives for attainment. Nonetheless, it is clear that considerable performance variation, and opportunity for improvement, exists even where not at first apparent.

The model laid out here can be rapidly scaled since the design accounts both for how physicians are currently paid (chiefly through a fee schedule) and for treating the PIP as an add-on rather than a completely new approach to existing payments. This nuance allows contract negotiations to be structured in terms of additional reward rather than an additional risk of an unknown payment system being introduced. Moreover, the PIP adjustment's structure allows for an enhanced payment to be made prospectively for claims, based upon historical savings achieved, rather than a single quality "reward." Generally, insurers face 2 challenges when creating quality incentives: justifying enhanced payments the level of enhanced quality, and setting aside funds to pay for a program with finite dollars. This is magnified when dealing with ASO groups that use an insurer to gain access to a network of providers and rates. The PIP adjustment is structured to pay enhanced rates prospectively based upon quantifiable reductions in medical loss for which ASOs would pay their fair share of incremental cost.

The PIP payment is specifically designed to reward PCPs that accept responsibility for sicker patients. Sicker patients in Y_1 will have more expected PPAs and PPVs in Y_2, allowing for greater gains, as evidenced by Table 3. Less sick patients incur less expected utilization and, therefore, offer less potential for reward. In this way, the potential for selection bias is reduced since PCPs have to gauge a patient's CRG assignment, prospective weight, and future resource use. If incentives grow too precipitously however, there is the potential for PCPs to "deselect" patients

as the period progresses and utilization increases. Such a danger can be monitored using categorical clinical models.

Lastly, health policy experts have pointed to the excessive waste in our healthcare system. Some have asserted that we could cut our expenses by 30% to 40%. (Fischer E et al 2009 Part I and Part II) by narrowing variation in practice patterns. Why is there a discrepancy between our estimates and those of, for example, the Dartmouth Atlas? There are 3 possible reasons for the discrepancy, each of which is likely to contribute:

- Not all avoidable expenses are included: PCP/specialist outpatient ancillaries and additional hospital admissions could be included over time (eg, avoided bypass grafts).
- The database used in this analysis comes from a state where per unit payments to hospitals and physicians is relatively low in comparison to that in many states.
- The Dartmouth estimate of 30% to 40% waste is too high as it is based on global analyses without attention to a specific categorization of PPEs as done in this article.

We maintain that the approach we have undertaken in this article in identifying PPEs is necessary in order to obtain PCP buy-in and ability to follow-up, improve outcomes, and decrease PPEs. This type of transparent information down to the patient level, as needed, will be needed if new forms of delivery such as Accountable Care Organizations are to be successful.

CONCLUSION

Success or failure will ultimately depend upon PCPs' ability to change the way care is delivered so as to positively impact the patients under their care. In return for this change, PCP payments will be increased in a manner that is sustainable to payers and recognizes the valuable role PCPs can play in improving the quality of the nation's health.

The pilot offers a path to change rather than a sudden system redesign, which should minimize upheaval. It is not clear how quickly and how much savings will be recognized. What is clear is that there are substantial untapped sources of revenue that can be used to support effective primary care.

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