

Evaluating Health Care Delivery Reform Initiatives in the Face of “Cost Disease”

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Abstract

The authors analyzed historical claims data from 2007 to 2011 from the Vermont All-Payer Claims database for all individuals covered by commercial insurance and Medicaid to determine per capita inpatient expenditures, cost per discharge, and cost per inpatient day. The authors further evaluated the proportion of all health care expenditure allocated to mental health, maternity care, surgical services, and medical services. Although utilization of inpatient services declined during the study period, cost per discharge and cost per inpatient day increased in a compensatory manner. Although the utilization of inpatient services by the Medicaid population decreased by 8%, cost per discharge increased by 84%. Among the commercially insured, discharges per 1000 members were essentially unchanged during the study period and inpatient cost per discharge increased by a relatively modest 32%. The relative utilization of mental health, maternity care, surgical services, and medical services was unchanged during the study period. The significant increase in the cost of inpatient services increased the proportion of total expenditure on surgical services from 21% in 2007 to 33% in 2011. The authors conclude that although health care providers are increasingly being assessed on their ability to control health care costs while achieving better outcomes, there are many cost drivers that are outside of their control. Efforts to assess initiatives, such as patient-centered medical homes, should be focused on utilization trends and outcomes rather than cost or, at a minimum, reflect cost drivers that physicians and other providers cannot influence. (*Population Health Management* 2015;18:6–14)

HEALTH CARE COSTS continue to rise. The ominous headlines read, “Health care is now ‘X’ percent of the GDP.” “X” has continued to rise over the decades. Is the rise of health care costs, relative to GDP, inevitable? Noted economist William Baumol says, “Yes.”¹ In explaining this “cost disease,” Baumol points out that some sectors of the economy are well suited to the productivity enhancing effects of technology. These so-called progressive sectors, which include agriculture and computing equipment, have experienced rapidly decreasing costs per unit. At the same time, Baumol argues that some sectors of the economy have a high labor component for which technology is not a substitute. For example, although robots can substitute for human labor in a defined manufacturing process of automobile assembly, robots can’t substitute for the human labor required to run a kindergarten classroom. Likewise, although health care services certainly involve a great deal of sophisticated technologies, almost all of those technologies are operated or

administered by clinicians at the point of patient care. As a result, even as health care services become more complex, they remain stubbornly resistant to efficiencies derived from economies of scale seen in progressive sectors. In fact, as innovative new technologies enter sectors that fundamentally provide high-touch, customized services, such as education and health care, the costs of those services can increase because of higher labor costs of trained professionals to operate these new technologies.

Baumol argues that this trend of rising overall costs in nonprogressive sectors, such as health care, will continue and should be viewed as an indication of an affluent society. Indeed, efficiency gains in progressive sectors have enabled us to make investments in areas that we most value—education, health care, and even entertainment. Underdeveloped economies that are just now engaging in progressive sectors are far from offering the level of health care available in the United States or in other developed nations. However,

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Baumol's argument does not imply that we cannot or should not address the rising costs of health care. Despite the inevitable increase in unit cost of services, health care providers must ensure that the most effective treatments are available at the appropriate place and at the right time. That is, at least in the United States, the cost of available treatment options has no impact on whether a given option will be deployed. At the same time, taxpayers bear a significant portion of health care costs and, in return, expect efficient and high-quality health care. Meeting these expectations will require reforming many interrelated facets of the US health care system.

Two decades ago, in response to the rising cost of health care, C. Everett Koop and his colleagues argued that we must reduce the need and demand for health care.² In other words, the most effective way to reduce utilization of health care services, and the corresponding total cost of care, is to keep people well. There are 2 ways to lower utilization. First, as prescribed by Koop and colleagues, utilization of services will decrease if the prevalence of chronic disease is reduced.³ Second, improving case management and the coordination of care for those individuals who do become ill will reduce utilization by avoiding unnecessary tests and procedures and thus reducing the rate of adverse events and complications.⁴

The purpose of this study is to evaluate the impact of patient-centered medical homes (PCMHs) on total health care costs over a 5-year period. Specifically, the study examines the utilization rate and per unit cost of care for different categories of health care services across different payers in the State of Vermont pursuant to the implementation of the Vermont Blueprint for Health (VBH). VBH is a statewide implementation of a novel delivery system model based on PCMHs that is focused on improving preventive health services for all citizens. Presumably, PCMHs result in improved coordination of care that should prevent the onset of disease or provide better disease state management and slow disease state progression. The result should be lower rates of inpatient hospitalization and emergency department visits. Because those health care services are among the most expensive, there should be a corresponding decrease in per patient cost of care.

Literature review

It is well known that the incentives and goals of US health care stakeholders are often incongruent. Fee-for-service reimbursement models incentivize providers to maximize utilization.⁵ Capitated reimbursement models and managed care can incentivize selection bias and denial of care. Neither model promotes coordination among the tens of thousands of distinct organizations that comprise the US health care system.⁶ Shared savings or pay-for-performance initiatives seek to overcome the limitations of fee for service and capitation by encouraging prevention and coordination of care. Under a shared savings arrangement, a group of providers contracts to provide comprehensive care to a defined population. If total cost of care is lower than a predetermined benchmark and the quality of care meets agreed-upon standards, the providers receive a portion of the savings as a "bonus." Although shared savings initiatives have shown some promise, the results are still mixed.^{7,8,9}

Although some programs have demonstrated improved financial and clinical outcomes, other initiatives show equivocal results on both sets of metrics.

PCMH: Vermont's experience, 2007–2011

Vermont's Blueprint model is designed to stimulate transformation and provide citizens in each Health Service Area (HSA) of the state with access to high-quality preventive health services. The model includes statewide expansion of advanced primary care with practices qualifying as PCMHs. Patients and families are supported in the primary care setting by multidisciplinary Community Health Teams (CHTs) that provide them with direct access to staff such as nurse coordinators, social workers, counselors, dietitians, health educators, and others. CHT staff work directly with, and are often embedded within, PCMHs. The result is a steadily expanding statewide network of independently scored PCMHs whose patients and families have improved access to multidisciplinary team-based services in the practice setting, with better linkages to more holistic health and human services in their community.

Underlying this transformation are 2 targeted payment reforms that involve the 3 major commercial insurers in the state, Vermont Medicaid, and Medicare as part of the Centers for Medicare & Medicaid Innovation Multi-Payer Advanced Primary Care Practice demonstration. First, a per person, per month payment is made directly to each primary care practice or parent organization based on their most recent score on the National Committee for Quality Assurance (NCQA) PCMH standards (NCQA PCMH standards). Second, a payment is made to support CHT staffing in each HSA at a ratio of 1 full-time equivalent for every 4000 PCMH patients.

VBH also is working with the Vermont Information Technology Leaders to establish a statewide health information network that populates a central registry capable of supporting improved health and human services for individuals, population management, comparative evaluation, and ongoing quality improvement. In addition, VBH is utilizing Vermont's All-Payer Claims Database (APCD) to evaluate outcomes and to support ongoing data-guided improvement with products such as practice-level profiles with comparative results for a set of standardized expenditure, utilization, and quality measures.

Overall, the Blueprint model is most directly designed to improve the rate at which the general population receives recommended preventive services in their communities and to reduce the rate of unnecessary acute care services (eg, hospitalizations, emergency department visits), a goal proposed by Koop and colleagues. Additionally, via the APCD, the Blueprint provides an opportunity to evaluate the relationship between changing patterns of utilization and expenditures as VBH delivery system reforms expand across Vermont.

Methods

This study was based on inpatient utilization measures constructed from Vermont's APCD, which includes eligibility and claims data. Vermont law requires collection of data on Vermont residents from commercial health insurers and Vermont's Medicaid program. For the purposes of APCD data collection, the definition of "health insurers"

includes third-party administrators, pharmacy benefit managers, hospitals and health systems, administrators of self-insured or publicly insured health benefits plans, and any other similar entity with claims data, eligibility data, provider files, and other information relating to health care provided to Vermont residents. APCD does not include any eligibility or claims data prior to 2007. The claims database includes all settings and claim types (inpatient, outpatient, professional, pharmacy) and includes services provided to Vermont residents by in-state and out-of-state providers. For this study, 2007–2011 eligibility and claims data were available. Medicare claims data for Vermont residents were not available to include at the time of this study.

The study population was restricted to adults aged 18–64 years. For consistency with other VBH studies, the study population was restricted to the subset of individuals in the APCD who had at least 1 encounter with a primary care practice. For Medicaid participants the study population included only those members, aged 18–64 years, who had full Medicaid benefits (ie, Medicaid was their primary payer). Even though Medicare data were not available, Medicaid data did indicate whether a given Medicaid recipient was also eligible to receive Medicare coverage. Dual eligible enrollees, individuals covered by Medicaid with concurrent Medicare eligibility, were not included because the authors were not able to calculate their total cost of care or utilization without access to their corresponding Medicare data.

All analyses were stratified by commercial and full Medicaid. Inpatient records were selected using a claim typology method based on uniform billing codes for bill type and room and board revenue codes indicating acute inpatient hospitalizations. Rehabilitation or nursing facility institutionalizations were not included. Expenditures were determined from the claims data as the allowed amount, which included the plan payments plus the member responsibilities (co-payments, coinsurance, deductibles). Retroactive settlements or other adjustments made to hospitals by commercial or Medicaid payers that are not reflected in the claims data are not included in this analysis.

Annual per capita rates were weighted to reflect duration of eligibility within a given year. The numerator, discharges or annual cost of care, is divided by a denominator scaled to reflect coverage duration using average membership from eligibility. Average membership adjusts for the partial length of enrollment that some members have during a year. For example, a member covered for 12 months during a year would have average membership of 1.00 while a member covered for only 9 of 12 months of the year would have average membership of 0.75.

Adjustments were made for outlier cases. Inpatient discharge length of stay was evaluated and capped at a maximum of 90 days. In addition, outlier discharge, inpatient days, and inpatient expenditures were capped at the 99th percentile. The capping was done independently for the commercial and full Medicaid populations. Table 1 provides the sample size for commercially insured and Medicaid populations for each year of the study horizon. Note that the rapid increase in the number of individuals in the commercially insured and Medicaid groups does not reflect a fundamental increase in the number of individuals who are commercially insured or on Medicaid in the State of Ver-

TABLE 1. STUDY SAMPLE SIZE PER YEAR

<i>Year</i>	<i>Commercially insured</i>	<i>Medicaid</i>
2007	104,160	59,606
2008	135,660	72,331
2009	148,812	84,186
2010	146,593	89,922
2011	150,846	92,891

mont. The increase is reflective of the number of individuals in the claims database with a 24-month look-back period.

The following measures were calculated:

- Inpatient Expenditures per capita = Inpatient Expenditures / Average Members
- Discharges per 1000 members = Discharges / (Average Members * 1000)
- Inpatient Days per 1000 members = Inpatient Days / (Average Members * 1000)
- Expenditures per discharge = Expenditures / Discharges
- Expenditures per Day = Expenditures / Inpatient Days

The inpatient case mix for the commercial and full Medicaid population did not change significantly during the 5-year study period. Rates reported are crude rates and are not adjusted for changes in health status or demographics over time.

Results

Figure 1 illustrates that inpatient Medicaid costs have been rising steadily and the unit costs for inpatient services have risen sharply between 2007–2011.

Figure 1A shows that annual inpatient expenditure per Medicaid enrollee rose by more than 76% during the 5-year study horizon. However, a closer examination shows that health care prices, not utilization rates, are responsible for the rising cost of care. As shown in Figure 1B, while utilization as measured by inpatient days per 1000 members decreased by nearly 8% over the time horizon of the study, the total cost per day of inpatient services increased from \$974 in 2007 to \$1859 in 2011, an increase of more than 90%. As an interesting juxtaposition, Figure 2 displays similar but muted trends among the costs of care for commercially insured individuals.

Figure 2A shows that total inpatient cost of care per member rose by 32% during the 5-year study horizon. The more modest increase in per member annual inpatient cost of care also was associated with a far more modest increase in the price of inpatient care. Figures 2B and 2C show that cost per day and cost per discharge increased by 12% and 33%, respectively. These price increases are substantially lower than those observed for the Medicaid population. Again, in contrast to the Medicaid population, utilization of inpatient services among the commercially insured increased during the study horizon by more than 30% as measured by the number of inpatient days.

The overall cost increases occurred in concert with a material shift in the allocation of health care expenditures for the Medicaid population. Table 2 shows the distribution of inpatient visits and expenditures in 4 specialties during the study period. Note that although the number of visits

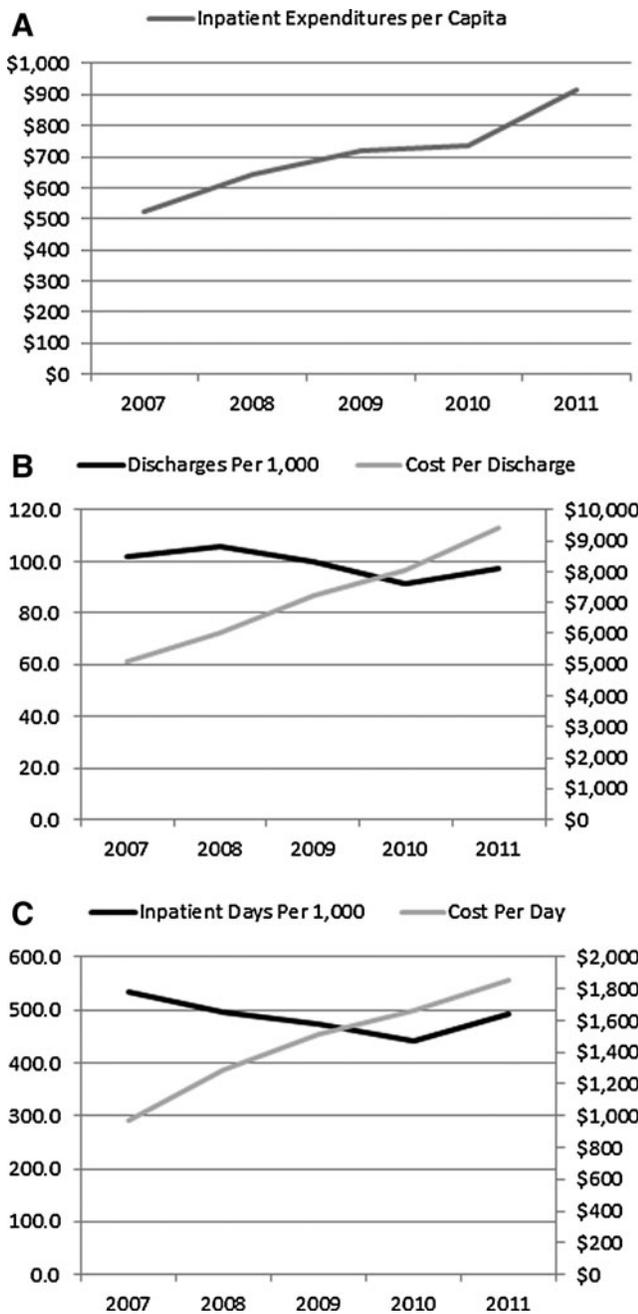


FIG. 1. Medicaid inpatient expenditure (A) per capita. (B) Per inpatient discharge. (C) Per inpatient day.

requiring surgical and medical services has been stable, the proportion of dollars allocated to surgical services increased dramatically. In contrast, the proportion of dollars allocated to mental health decreased, despite a small increase in the proportion of related visits. In comparison, the case mix and proportion of dollars allocated to each surgical service shown in Table 3 was essentially unchanged among the commercially insured population.

Discussion

Fundamentally, evaluating health care providers in the context of shared savings initiatives and cost-based pay-for-performance initiatives has 2 major challenges: ef-

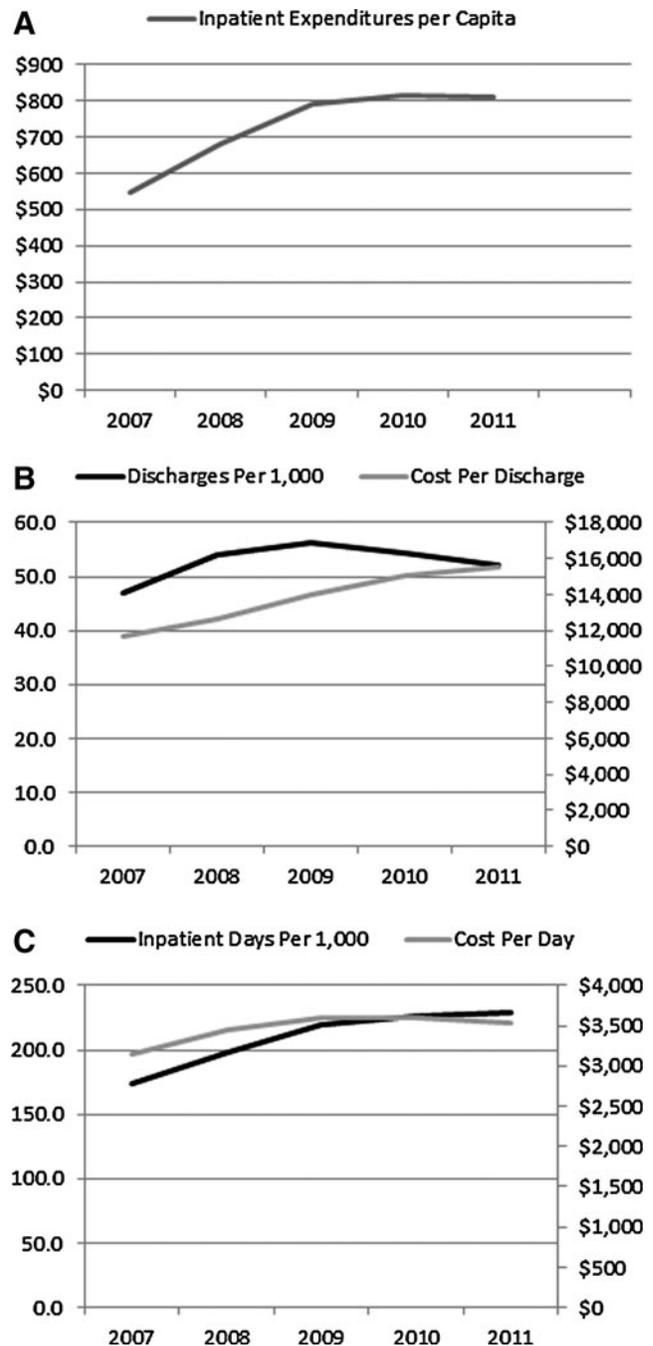


FIG. 2. Commercially insured inpatient expenditure (A) per member. (B) Per inpatient discharge. (C) per inpatient day.

fective implementation and accurate evaluation. On the implementation front, the most significant hurdle to achieving success is that coordinating and reconfiguring health care delivery processes is easier said than done. The challenges range from technological issues that prevent information flow to behavioral norms of practice that resist collaboration. Another challenge, albeit near term, is that clinicians are not fungible resources. The “ideal scenario” might require, for example, a greater number of substance abuse counselors and fewer emergency room nurses; however, changing the labor profile is a slow, and

TABLE 2. MEDICAID CASE MIX

	% Mental Health		% Maternity		% Surgical		% Medical	
	Expenditure	Visits	Expenditure	Visits	Expenditure	Visits	Expenditure	Visits
2007	29%	17%	27%	32%	21%	19%	23%	33%
2008	24%	16%	23%	34%	30%	19%	24%	32%
2009	19%	17%	24%	30%	33%	20%	25%	33%
2010	22%	20%	22%	31%	31%	19%	25%	31%
2011	21%	20%	23%	29%	33%	20%	25%	32%

The Medicaid case mix was relatively unchanged as expenditures shifted toward surgical services and away from mental health.

potentially expensive process. Although labor profile can be managed in the intermediate term, early failure may doom the initiative before human resources are ever properly deployed.

The challenge of accurate evaluation is more subtle. On the surface, assessing the effectiveness of providers seems fairly straightforward. If total cost of care for the defined population decreases and quality goals were met, the providers would succeed. If total cost of care for the defined population increases, the providers would have failed. However, such analysis is accurate under a very narrow definition of the actors and forces that shape the industry and impact price levels.

For instance, a first at glance Figure 1 could lead one to conclude that the providers caring for the Medicaid population are not performing well from a cost containment perspective. One possible explanation for the increase in the cost per day of inpatient care is a corresponding reduction in length of stay. Although total cost of care might remain unchanged, decreasing average length of stay would spread the total cost over fewer days. The result would be higher per-day cost, even though total cost of care for that episode was unchanged. However, this study found that the rising average per-day cost was not driven by shorter length of stay. As shown in Figure 1C, even as the relative frequency of hospitalization events decreased, the cost per inpatient discharge rose by nearly 84%.

In fact, taken together, Figures 1 and 2 show a persistent pattern of expenditure preservation for inpatient services whereby efforts by health care providers to reduce utilization are met with price increases that more than offset the reduction. If the Medicaid population experienced the same modest 33% increase in cost per discharge of the commercially insured group rather than the 84% observed increase, Vermont's Medicaid program would have spent consider-

ably less on inpatient services. Utilization decreased from 101.9 discharges per 1000 members in 2007 to 97.5 discharges per 1000 members in 2011. Cost per discharge increased from \$5115 in 2007 to \$9407 in 2011. If cost per discharge increased by 33% (from \$5115 in 2007 to \$6802 in 2011), Vermont would have spent \$23,593,000 less on inpatient care for the 92,891 participants enrolled in 2011.

However, the higher costs of the Medicaid program are not reflective of any financial or medical mismanagement. Medicaid reimbursement rates were deliberately increased in 2009 and 2010 to compensate for budget-related rate reductions in prior years and to attract more providers to the program. The strategy worked, but resulted in higher cost of care that was unrelated to physician efforts. It also explains a massive increase in per capita expenditure on inpatient services for the non-PCMH Medicaid population (data not shown). That group experienced the same substantial increase in cost per discharge but did not experience the decrease in utilization enjoyed by the Medicaid PCMH participants.

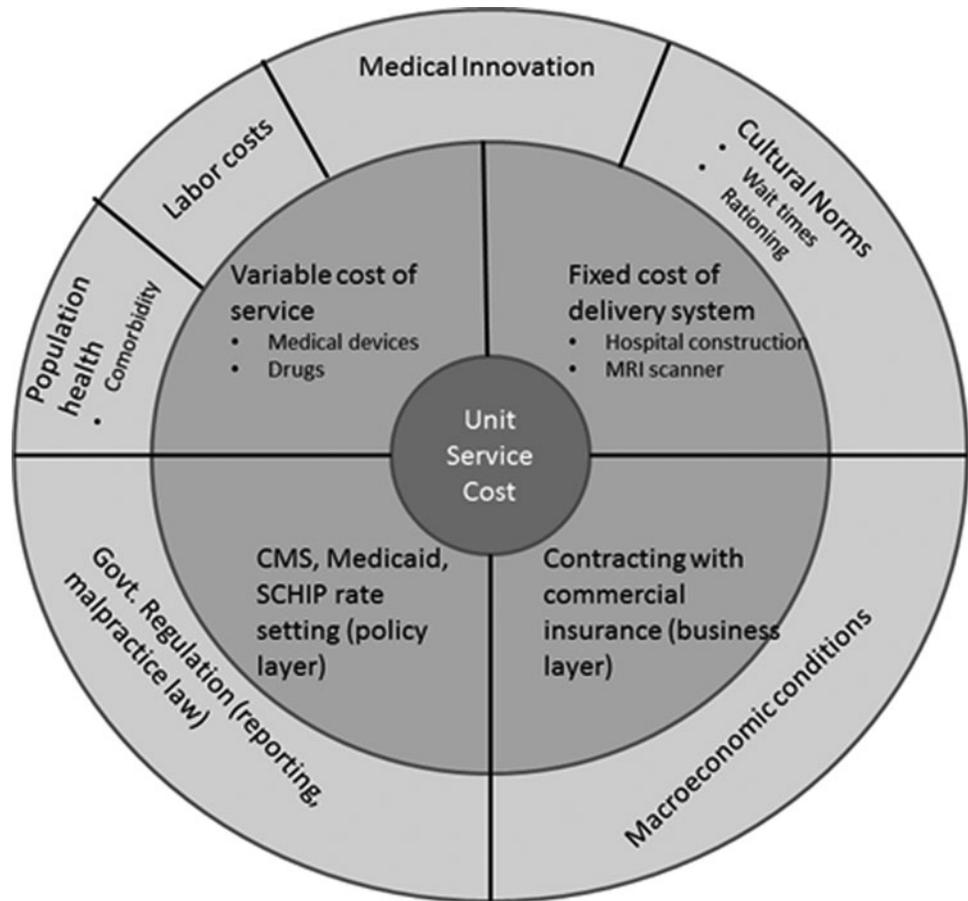
If we step back from the most commonly discussed trio—patient, provider, and payer—we observe many other actors and forces emerge (Fig. 3). Medical innovations, changes in labor costs, and trends in population health influence the unit cost of medical services. Similarly, upgrading hospital facilities to cater to the changing consumer expectations of health care services and competition among hospitals drive costs of delivering patient care. Unit service costs are also influenced by compliance and reporting regulations such as the Health Insurance Portability and Accountability Act and the Patient Protection and Affordable Care Act (PPACA). Finally, changes in macroeconomic conditions, such as an economic recession, may result in fewer insured and is likely to drive up per-unit costs because providers must allocate fixed costs to fewer paying consumers.

TABLE 3. COMMERCIALY INSURED CASE MIX

	% Mental Health		% Maternity		% Surgical		% Medical	
	Expenditure	Visits	Expenditure	Visits	Expenditure	Visits	Expenditure	Visits
2007	3%	5%	9%	22%	63%	37%	27%	36%
2008	3%	6%	8%	20%	63%	37%	28%	37%
2009	3%	6%	8%	19%	64%	37%	27%	38%
2010	3%	6%	9%	20%	62%	35%	28%	39%
2011	4%	7%	9%	20%	63%	36%	27%	37%

The commercially insured case mix was relatively unchanged and there was no shift in expenditures.

FIG. 3. The forces that drive the cost of health care services. CMS, Centers for Medicare and Medicaid Services; SCHIP, State Children's Health Insurance Program



Although only some of the actors and forces shown in Figure 3 directly impact the delivery of health care services, all of them exert an influence on the cost of those services. Though providers can utilize information technology to coordinate their activities and reduce cost by eliminating unnecessary or duplicate tests and procedures, they are powerless to combat the increase in cost associated with the introduction of a new, patented chemotherapy agent. Likewise, as providers streamline documentation and workflows, government regulation can increase costs by adding layers of potentially useful but expensive mandatory reporting. Similarly, although delivery processes can be reconfigured to incorporate nutritional counseling to reduce diabetic complications, the reduction in hospitalization events that are avoided may be offset by a subsequent increase in the negotiated reimbursement rates for inpatient care.

Reimbursement rates are particularly thorny because providers may position themselves strategically through mergers and acquisitions such that they achieve greater bargaining power with insurance companies. Rates also may reflect the shifting of costs associated with uncompensated or under-compensated care and might be an inaccurate reflection of the actual cost of a unit of service. Policy makers may unilaterally increase rates to improve provider participation in certain programs, thereby wiping out savings from improved processes and utilization rates.

The challenge to delivery system and payment reforms is that providers, who are held responsible for the cost of care, are powerless to affect many of the actors and forces responsible for rising costs over time. Therefore, although these delivery reforms may be effective at promoting wellness and decreasing unnecessary utilization they may not be seen in a positive light because of their inability to control costs, at least in the short run. If this line of reasoning holds true, health care reform will need to address payment rates, business practices, and other aspects that accelerate health care costs in addition to improvements in the quality of health services and utilization.

The PPACA of 2009 contained provisions that set the stage for state-level experimentation with initiatives designed to promote wellness, improve disease state management, and control costs. As a result, states across the United States are implementing innovative delivery system programs, often involving multiple insurers, to test novel payment models that are targeted toward improving access to preventive health services, reducing unnecessary hospital care, and achieving better control over the growth in health care costs. These initiatives provide an opportunity to evaluate how markets will respond and, more specifically, whether improved patterns of health care resource utilization lead to a reduction in related health care expenditures. For example, it remains unclear whether a reduction in hospitalizations will actually lead to lower

inpatient expenditures, or whether market forces will respond in a way that maintains inpatient expenditures through changes in payment rates. Initiatives that involve all major insurers across a state or region establish a natural laboratory to evaluate these dynamics, particularly if the capacity is in place to measure utilization and actual expenditures in a consistent manner across the entire population receiving services in the new health care model.

Although providers play an important role in controlling health care costs, the overall costs of health care in the United States are also driven by other exogenous factors

over which providers have minimal control, if any. This has important policy implications as state and federal initiatives to explore shared savings programs proliferate. Consider Vermont's efforts to promote adoption of PCMHs. Table 4 provides some examples of how the drivers identified in Figure 3 are likely to impact overall health care costs and how PCMHs can influence those cost drivers.

Although the list of examples in Table 4 could be expanded, it is clear from the aforementioned that PCMHs have limited influence over many cost drivers. Clearly, there are instances in which a disruptive medical innovation, such as a

TABLE 4. PCMH INFLUENCE ON HEALTH CARE COST DRIVERS

<i>Cost driver</i>	<i>Impact on health care costs</i>	<i>PCMH Influence on providers</i>
Population health	Increasing prevalence of chronic disease is the single strongest driver of health care costs in the United States.	<i>Potentially strong</i> Education, case management, and consistent application of evidence-based best practices.
Labor costs	Labor shortages are driving up the wages in a number of disciplines including nursing and medicine.	<i>None</i> All providers are at the mercy of the broader labor market.
Medical innovation	New medical technologies are typically under patent protection. Although quality of care can increase dramatically, cost often increases as well.	<i>None</i> Providers generally seek to utilize new technologies regardless of the impact on cost in order to achieve the best outcomes for their patients. Until patent protection expires, providers are price takers.
Cultural norms	Expectations of stakeholders drive costs higher. Patients expect to be seen quickly, requiring slack capacity. Physicians expect high salaries, requiring higher reimbursements and/or shorter appointment times.	<i>Minimal</i> Although individual providers can choose to forgo revenue in favor of longer appointments, they have no influence over the expectations of others.
Macroeconomic conditions	Strong macroeconomic conditions can provide individuals with the resources and insurance coverage needed to proceed with nonurgent procedures they might otherwise forgo.	<i>None</i>
Government regulation	Extensive regulations designed to ensure quality, safety, and privacy add a layer of costly documentation processes.	<i>Limited</i> Lobbying may influence.
Government rate setting	Federal and state governments unilaterally decide on reimbursement rates for the programs they fund.	<i>Limited</i> Lobbying, for example, in favor of higher reimbursement rates.
Variable cost of service	Treating patients who have experienced or are experiencing an adverse event is generally more expensive than interventions focused on avoiding events associated with disease state progression.	<i>Strong</i> PCMHs can focus on minimizing waste and focusing on low-cost preventive measures.
Fixed cost of delivery system	Advances in surgical and radiological technologies such as intraoperative MRIs, Gamma Knife radiosurgery, and da Vinci robotic surgical systems.	<i>Minimal</i> Most of the fixed costs of a delivery system are represented by hospitals and surgical centers. PCMHs have minimal influence over how they manage capacity and investment.
Contracting with commercial insurance	The highly fragmented nature of the primary care provider market enables commercial insurers to negotiate lower reimbursement rates.	<i>Variable, Minimal</i> Depending on market share PCMHs may have the ability to negotiate higher levels of reimbursement.

PCMH, patient-centered medical home; MRI, magnetic resonance imaging.

new low-cost diagnostic test or a new scanning technology, can result in lower overall health care costs. The salient point is that regardless of whether a given manifestation of a cost driver has a positive or negative impact on overall cost of care, PCMHs often have little or no influence over the cost outcomes. Furthermore, even as primary care providers seek to improve wellness, manage disease state progression, and decrease utilization of tertiary care services, other forces may be driving costs higher in order to achieve different positive outcomes (eg, improved accessibility).

Conclusions

The preliminary findings of this study indicate that evaluating the performance of PCMHs is a complex issue because many forces outside their control influence total health care expenditure. Although the study data provide evidence that PCMHs have an impact on reducing utilization of health care services, they also show that health care costs continue to rise because of factors other than utilization. Efforts to decrease utilization are necessary but not sufficient to lower total cost of care. The authors conclude that providers and payers will benefit from examining how the external forces shown in Figure 3 impact shared savings and reimbursement practices as they seek to promote wellness and control over per unit service costs. Recent commentaries suggest that policy makers are aware that many factors other than utilization and outcomes can drive health care costs. Recent articles in media outlets such as *The New York Times* cite the weak US economy and the early impact of the PPACA as possible reasons why health care cost increases have moderated over the past year.¹⁰ The President's Council of Economic Advisers issued a report in November 2013 assigning a large fraction of the decreased costs to the reduction in Medicare overpayments to providers.¹¹ Although the present study did not specifically evaluate Medicare data, the point is that factors other than physician activity are emerging as powerful drivers of health care expenditures. With so many potential drivers of cost, shared savings initiatives will benefit from more precise assessments that hold each relevant stakeholder accountable for the impact of the forces they most strongly influence on cost of care. Effective evaluation of PCMHs requires that we formally evaluate those forces and hold providers accountable for only those factors that are within their sphere of influence, which are primarily those related to quality outcomes and utilization rates.

Although discussions related to health care costs often become politicized, the findings of the present study imply that health care costs and population health management must be viewed as 2 sides of a coin; both must act in unison. Many forces are driving health care costs, some serve to drive them higher while others drive them lower.

Singular emphasis on cost control is unlikely to address the core issue that drives patient care costs—chronic diseases. Even if the President's Council of Economic Advisers is correct and limiting Medicare overpayments is responsible for the current trend in costs, that trend is bound to be short lived if we can't improve the bleak public health picture of the United States. At the same time, although prevention of and efficiency in treating chronic diseases is always desirable as an ongoing goal, a singular emphasis on

disease management and prevention is not enough to decrease health care costs.

No single stakeholder in health care delivery has the incentive or the ability to influence health care costs in the long run. Therefore, the authors recommend that state agencies take a leadership role in managing utilization of health care services and ensuring that other actors share the responsibility for managing the costs of health care services. Consistent with former Surgeon General Koop's suggestion, PCMHs that target chronic diseases can reduce the utilization of acute care services as well as lower avoidable hospitalizations and readmissions. However, as Baumol has argued, we should not be surprised that health care costs will continue to rise over time. That being the case, we need to focus on prevention and wellness.

Author Disclosure Statement

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