

Comprehensive Primary Care Payment Background Report

Health Data Decisions
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I. EXECUTIVE SUMMARY

A. Overview

Family Medicine for America's Health (FMAHealth) is developing a Comprehensive Primary Care Payment (CPCP) model to support the move from activity- and volume-based payment to performance-based payment for value. FMAHealth is a five-year collaboration sponsored by eight key family medicine organizations in the United States. Its mission is to demonstrate the value of primary care in achieving better health and better care at lower costs for people across the United States while improving the ability of primary care professionals to reach the full potential of professional and personal success that primary care offers. To accomplish its mission, FMAHealth has created seven Tactic Teams that focus on the following critical areas: Practice Transformation, Technology, Research, Payment, Workforce Education and Development, Engagement of Stakeholders, and a Cross-Tactic Team on Reducing Health Disparities. For more information, see <http://fmahealth.org>.

The objective of this project is to research and develop a quantitative methodology to describe a comprehensive primary care payment model and create a prospective calculator which applies this methodology and models its expected impact. This study surveys the current state of value-based primary care payment models in use in the U.S. and draws key information about the efficacy, challenges, and successes of these programs. The resulting recommendations provide a framework and justification for critical components of a CPCP model.

The dominant model of primary care in the United States is designed around the fee for service (FFS) payment where a provider is compensated by the number of procedures performed. This encourages a focus on illness and quantity instead of health and quality. Continued increases in the cost of care, in aggregate and to the patient, and the mounting evidence that investments in quality impact long term costs supports alternative and value-based payment models. Patient-Centered Medical Home (PCMH) programs and Accountable Care Organizations (ACOs), have helped to create a culture of measurement, accountability and innovation in primary care. The proliferation of these models has allowed for the maturation of the foundational standards they foster, however underlying FFS payment has limited its full potential. The U.S. primary care system is moving rapidly toward more innovative and progressive forms of primary care payment that support a health model of care, as opposed to an illness or transactional model of care. The first annual Starfield Summit, a national conference focused on advancing primary care, generated an annotated bibliography which defines CPCP as "payment based in risk-adjusted PMPM fees (risk-adjusted capitation) designed to cover all practice expenses including salaries, infrastructure, and health information technology; this differs from traditional capitation where payments were based on average FFS expenditures and is intended to increase overall financial support for primary care practices."¹⁹

B. Recommendations

Based on our findings, we recommend that a comprehensive primary care payment methodology incorporate the following key components and best practices:

1. *Primary Care Payment Rate: The CPCP payment rate should account for approximately 10-12% of total health care costs, in contrast to the roughly 9% supported by high performing health systems today.*
2. *Population Risk Adjustment: The payment should be risk adjusted using a hybrid model including the Primary Care Activity Level (PCAL) framework with a Minnesota Complexity Assessment Model (MCAM), component. The Chronic Illness and Disability Payment System (CDPS) can be used as a validation proxy for development and testing. Common commercial models may also be used.*
3. *Social Determinants of Health: The payment should be further adjusted by leveraging Medical Expenditure Panel Survey (MEPS) data sources for setting indices for social determinants of health for use in a CPCP model. The U.S. Social Deprivation Index may be used to create adjustments that take MEPS data as inputs.*
4. *Infrastructure Adjustment: Recommend setting an infrastructure floor to align with research of the cost to maintain minimum PCMH standards. Scaling factors should be tied to a measure of comprehensiveness of care.*
5. *Efficiency Adjustment: Recommend using common and proven global efficiency metrics include hospital admissions for ambulatory care sensitive conditions (ACSC), potentially avoidable emergency department visits, generic fill rate, and a measure of comprehensiveness of care*
6. *Quality Adjustment: Recommend using the Core Quality Measures Collaborative's PCMH-ACO-Primary Care Core Measure Set, with additional focus on measures of comprehensiveness and continuity of care. Metrics should focus on risk adjusted outcomes relative to expected outcomes.*
7. *Patient Attribution: For patients without positive selection records, recommend deploying an industry standard 4-step attribution methodology supplemented by a matrix of stopping rules derived from physician productivity research to set boundary levels.*

II. INTRODUCTION

A. *The Role of Primary Care in an Evolving Market*

The U.S. medical system is experiencing a period of profound transformation, and primary care is at its center. While primary care is not the largest line item contributing to total cost of care, it offers innovators and policy makers the most tangible single point of leverage on the entire system. The impacts that primary care practice and payment models have on other aspects of the health system are far reaching. While primary care clinics must maintain high case loads and full schedules in order to remain competitive in the legacy fee-for-service environment, patients with complex needs are met with a multitude of access barriers. Long wait times to get appointments, limited face-to-face time with physicians, administrative issues with insurance coverage, and crushing deductibles are among the impacts that a fee-for-service-oriented primary care health system has on the population under its care. “Under a FFS payment system, physicians often provide time-intensive services such as counseling, patient education, screening, and preventive medicine at a decreased level of efficiency, because total payment (i.e. revenue) is based on the overall volume of services.”⁵

The Medicare Payment Advisory Commission (MedPAC) strongly supports this view FFS payment models in primary care. “The Commission remains concerned that the [Medicare physician] fee schedule and the nature of FFS payment leads to an undervaluing of primary care and overvaluing of specialty care,” MedPAC stated in its March 2016 report to Congress. MedPAC further noted, “The FFS fee schedule is oriented toward discrete services and procedures that have a definite beginning and end. In contrast, ideally, primary care services are oriented toward ongoing, non-face-to-face care coordination for a panel of patients. Some patients in the panel will require the coordination of only preventive and maintenance services. Others will have multiple complex chronic conditions and will require extensive care coordination.”⁵

While the primary care system’s effectiveness is limited by the financial model supporting it, both the market and regulatory bodies are responding. A wide variety of primary care models are in various stages of development, deployment and testing in all corners of the industry. Patient centered medical home models have become a clinical practice transformation gold standard since the end of the last decade. The Medicare and CHIP Reauthorization Act (MACRA) has created pathways for a new breed of payment models and the latitude to experiment with even more innovative ones. The CPC+ model administered by CMS aligns with 54 payers in 14 U.S. regions to provide advanced primary care services to over 1.76 million Medicare beneficiaries. CPC+ Round 1 began in January of 2017 and proceed for five years. Elsewhere in the industry, intrepid groups of physicians are eschewing the insurance model altogether and establishing private-pay-only practices under the name Direct Primary Care. DPC patients pay

monthly comprehensive fees directly to their PCP and receive primary care services and in some cases generic medications, imaging, and care management services. In more mainstream settings, the Accountable Care Organization model has gained tremendous ground since its inception. In 2011, CMS approved 32 pioneer ACOs, many of which have successfully transitioned into next-generation ACOs in 2016. These ACO models have established increasingly prominent positions in regional payer networks.

In early 2017, the Health Care Payment Learning and Action Network published a white paper outlining a variety of principles and goals undergirding primary care reform and the new payment models (PCPMs) supporting it. Selections from the HCPLAN’s recommendations are summarized below.

- The preferred form of payment for primary care employs risk-adjusted, comprehensive prospective payment, including some retrospective reconciliation, based on the patients empaneled or attributed to the primary care practice. This corresponds to payments in Category 4 APMs.
- Prospective payments should be in excess of historic primary care payment amounts to support the infrastructure of the clinical team that will be held accountable for greater coordination of services and for bending the total health system cost curve.
- PCPMs should use prospective payment to fund the necessary investments by primary care organizations in practice infrastructure to result in more efficient delivery of health care.
- Incentive payments in primary care should be based on a parsimonious set of high-impact measures of primary care, rather than rely exclusively on a rigid set of disease-specific metrics.
- PCPMs should maximize the flexibility for primary care teams to expend resources on care coordination and population health, including direct support for community programs that demonstrably address social determinants of health to improve patient outcomes.
- Although incremental progress should be made much more quickly, PCPMs can only be expected to deliver a return on investment over the long term. Therefore, payers should develop business models that do not require investments in PCPMs to be recouped from short term reductions in total cost of care in the short term.²²

Many of the recommendations made by the HCPLAN attempt to leverage a critical but often latent factor: physician behavior and incentives. In April of 2016, the first Starfield Summit was held in Washington D.C. to explore primary care reform challenges, goals and some of the disruptive models currently in play. One of the key themes developed at this conference was the effect of incentives on physician behavior and practice transformation. “Incentives at the practice level are frequently

not the same as the incentives seen at the clinician level; for example, a practice may receive shared savings while the individual physicians receive non-financial incentives for reducing costs. In many alternative payment models, individual physician compensation remains grounded in FFS, putting cost and quality targets at odds with the primary method of reimbursement. Physicians report frustration with the administrative burdens of quality metrics, but tend to find them more palatable if their autonomy is preserved.”¹⁹

Successful primary care payment models must scale in such a way that practice consolidation and payer collaboration creates a broadened alignment of incentives, rather than barriers to performing with common purpose. The 2016 Starfield Summit yielded a white paper which put forth a set of guidelines, a selection of which follow:

- The proportion of total health care spending going to primary care should be increased to 10-12%. Payment much support necessary infrastructure, particularly regarding data systems that are integrated across settings, providing timely feedback.
- Effective primary care payment pays for more than just traditional primary care; it covers integrated behavioral and public health, care coordination, and related social services. This supports a shift towards team-based, community-oriented care.
- Where payment is tied to quality, attention must be paid to selecting patient-oriented measures appropriate for primary care that do not create overly burdensome requirements.
- Payment models with a basis in PMPM fees allow necessary flexibility to use funds to meet varied patient needs while creating the opportunity for a proactive rather than reactive approach to patient care. Most alternative payment models are still grounded in FFS.
- Adequate risk adjustment is essential to protect against cherry picking patients, inappropriate underutilization of services, and undue risk on practices.¹⁹

The American Academy of Family Physicians published a 2016 position paper that solidified a recommendation for global, prospective payment for primary care services, with linkage to existing MACRA models. “Specifically, the AAFP recommends an APM that includes a primary care global payment for direct patient care, a care management fee, and FFS payments limited to services not otherwise included in the primary care global fee—coupled with performance-based incentive payments that hold physicians appropriately accountable for quality and costs. These prospective, performance-based incentive payments would reward practices based on their performance on patient experience, clinical quality, and utilization measures. The CPC+ performance-based incentive payment is an example of such a payment mechanism. Commercial payers are also showing the value of

investing in enhanced, prospective payments that include mechanisms for accountability.” The AAFP continues, “The current FFS system and its payment levels for primary care are inadequate on every level. Our health care system should pay for what it truly values. As articulated by the current fee schedule, we do not value primary care. This proposal places a marker in the ground for how primary care should be paid differently and better to deliver an advanced level of care and services to every American. In return, it is essential that payment levels be dramatically increased to ensure this transformation is possible and sustainable over time. Extending current payment levels into this new delivery model would be a tragedy and disservice to our health care system and every patient.”⁵

Fee for service models fundamentally support an illness model of care, as opposed to a health model of care. Illness models are fundamentally transactional, whereas health models are cumulative, relational and function over extended periods of time. As CMS continues to develop and implement more progressive models through its Innovation Center, and market forces continue to spark widely varying experimental programs through payers, group practices and IPAs, it becomes increasingly more critical to acknowledge the fact that payment and delivery systems are too intrinsically linked to change independently. Our project, as a society, is to discover a way to both pay for and deliver medical care through a health model as opposed to a transactional one.

B. Research Objectives

The objective of this report is to provide perspectives on primary care reimbursement as it interacts with other systems of care and the broader industry. Specifically, our aim is to explore lessons learned from current value-based payment models, and evaluate the current state of core components necessary to design a comprehensive payment for primary care. These core components include:

- Prospective primary care PMPM rate targets as a proportion of total cost of care
- Risk adjustments
- Quality adjustments
- Efficiency adjustments
- Infrastructure adjustments
- Social determinants of health
- Patient attribution approaches

III. EVIDENCE AND FINDINGS

A. The Value-Based Primary Care Payment Model Spectrum

The U.S. healthcare industry is currently experimenting with a wide variety of payment models which represent of spectrum from FFS-hybrid models to direct primary care. In this section, we explore existing and previous attempts to implement CPCP-like payment models in various segments of the industry. Compared to other models, historical attempts at comprehensive payment typically faced difficulties with risk adjustment and rate setting, and may have created incentives to withhold care when not properly balanced. It will be critical to acknowledge these pitfalls and address them in developing a contemporary payment model.

We begin with the most ubiquitous model – the patient-centered medical home. Next, we explore other FFS-hybrid models with quality- and efficiency-laden adjusters used by regional payers such as Blue Cross and Blue Shield in Louisiana, Michigan and Massachusetts, then move to public programs such as CMS' CPC, Ohio's CPC, and Oregon's global budget program for Medicaid, HMSA's cutting-edge comprehensive primary care payment model, and finally to Qliance in Seattle which is a pioneering direct primary care organization. No single program provides a blueprint for CPCP, but each one provides valuable insights into different aspects of the model's core components. Key findings appear in *italics* throughout this section.

Patient-Centered Medical Homes

PCMH has been established as a core standard practice model over the past decade. At the heart of the medical home model is entirely new business model for primary care. This new

model replaces the FFS business model which solely focuses on driving face to face visits to generate revenue with a team based approach to care that incorporates care coordination, enhanced care management, and population health to achieve improved health outcomes. In other words, in the traditional FFS model a physician spends 100% of their time seeing patients face to face, while in mature medical home the physician's time is re-allocated to approximately one-third face-to-face patient visits, one-third indirect patient care (phone, video, email, etc.) and one-third oversight of the care team. To date, many of the of medical home pilots have demonstrated limited to modest returns, in part due to the fact that most practices must straddle a significant portion of their patient reimbursement under FFS and a smaller portion as medical home performance-based revenue. Most importantly is that PCMH sets the stage as a foundational model for primary care effectiveness, and establishes the necessary infrastructure for more advanced approaches. A variety of proprietary mechanisms, e.g. NCQA, URAC, JCAHO, etc., exist to evaluate PCMH operations, however the value of these resource intensive and expensive PCMH recognition programs has not been established. This section will focus on the non-proprietary methods, in particular those of the Patient Centered Primary Care Collaborative (PCPCC) and The Commonwealth Fund.

The PCMH model has also served as a laboratory for primary care payment models. A 2014 study conducted by Harvard Medical School examined the distribution of payment models in place among PCMH programs nationwide which incorporated some form of payment reform, finding that the number of initiatives featuring payment reform incentives had increased from 26 in 2009 to 114 in 2013. "The number of patients covered by these initiatives had increased from nearly five million to almost twenty-one million. We also found that the proportion of time-limited initiatives— those with a planned end date—was 20 percent in 2013, a decrease from 77 percent in 2009. Finally, we found that the dominant payment model for patient-centered medical homes remained fee-for-service payments augmented by per member per month payments and pay-for-performance bonuses. However, those payments and bonuses were higher in 2013 than they were in 2009, and the use of shared-savings models was greater. The patient-centered medical home model is likely to continue both to become more common and to play an important role in delivery system reform."¹⁷

Exhibit 1. Excerpted from Edwards, 2014¹⁷

EXHIBIT 3					
Payment Methods Used By 114 Patient-Centered Medical Home Initiatives That Included Payment Reform Incentives, 2013					
Payment method	Type of initiative, by payer				
	Single commercial payer		Medicaid only	Multiple payers	All
	Small	Large			
Fee-for-service (FFS) only	3%	0%	35%	0%	8%
FFS and pay-for-performance bonus	0	30	0	5	8
FFS and per member per month (PMPM) payment	33	7	35	43	29
FFS, pay-for-performance bonus, and PMPM payment	65	63	30	52	55
PMPM payment (median) ^a	\$4.00 ^b	\$5.00 ^c	\$3.62 ^d	\$7.00 ^e	\$4.90 ^f
PMPM payment adjusted for:					
Patients' characteristics ^g	8%	43%	47%	55%	32%
NCQA level	69	52	33	20	50
Quality performance	23	33	0	8	19
PMPM payment for patients with multiple chronic diseases only	5	0	20	10	8
Pay-for-performance bonus	65	93	30	57	64
Based on clinical quality	100	100	71	100	97
Based on patient experience	8	15	29	58	21
Based on downstream utilization	92	85	71	75	85
Shared savings	38	45	44	57	44
Up-front payment	5	21	4	19	12
Initiative pays for care coordinators separately from PMPM payments	5	21	30	19	17

SOURCE Authors' analyses of survey data provided by patient-centered medical home initiatives. **NOTES** Sample sizes for each payer category are provided in Exhibit 1, and small and large single commercial payer initiatives are defined in the Exhibit 1 notes. National Committee for Quality Assurance (NCQA) levels are explained in the Exhibit 2 notes. ^aExcludes initiatives that make per member per month payments only for patients with multiple chronic diseases. ^bInterquartile range (IQR): \$3.50–\$6.50. ^cIQR: \$2.50–\$8.00. ^dIQR: \$2.44–\$8.87. ^eIQR: \$5.18–\$24.00. ^fIQR: \$3.00–\$8.00. ^gIncluding age, sex, and preexisting conditions

Federally qualified health centers (FQHCs) play a critical role in the primary care safety net, serving nearly 23 million patients, many of whom are uninsured or on Medicaid. A study supported by The Commonwealth Fund in 2016 sought to identify key tactics that health centers could use to approach PCMH practice transformation, given their unique financing, payer mix, and patient population. Roughly 700 FQHCs were assigned a PCMH capability score from 0 (worst) to 100 (best), based on their ability to perform key medical home functions, including care management, patient tracking and registry, and quality improvement. The study found that FQHCs with higher PCMH scores tended to have robust electronic health records, receive financial incentives or rewards from payers for achieving high patient satisfaction or clinical care targets, be affiliated with local hospitals, and be located in states that support PCMH development.³⁴

The PCMH Evaluators' Collaborative is a Commonwealth Fund supported center of excellence which seeks to align evaluation methods, share best practices, and produce useful information to inform policy and practice in order to:

- Reach consensus on a core, standardized set of outcome measures and data collection instruments
- Share the consensus with interested researchers across the country
- Foster an ongoing and supportive exchange where evaluators share ideas that improve the design and interpretation of results

The collaborative is open to researchers actively engaged in a PCMH evaluation, with over 75 contributing evaluators engaged. In 2012, the key researches published a set of standards which recommended

core utilization, efficiency, expense and clinical quality measures which attempt to complete the logical connection between these metrics and the PCMH infrastructure.

Core utilization measures:

- Emergency department visits (all and/or ambulatory-care sensitive)
- Hospitalizations (all and/or ambulatory care-sensitive)
- Readmissions within 30 days¹

Supplemental Utilization Measures to Address Efficiency:

- Primary care visits
- Specialist visits
- Laboratory and imaging tests
- Prescriptions¹

Expense Measures:

- Total medical claims cost per member per month
- Cost per case (episode)—calculated using standard episode grouper software—for targeted conditions
- Cost impact should be calculated for entire enrolled population but also subsets of patients who are likely to benefit more from the PCMH¹

Principles for Assessing Clinical Quality:

- Evaluators should use standardized, validated, nationally endorsed measures.
- Evaluators should select measures from the following areas of primary care: prevention, chronic disease management, acute care, overuse, and safety.
- Evaluators should apply a validated approach to data collection, especially if using measures from medical or electronic health records.
- Evaluators should use consistent measures across practices within a demonstration¹

Additional specifications:

- Ambulatory care sensitive versions of emergency department visits and inpatient admissions should be considered (either/or)
- Risk adjustment: necessary for cost and utilization analyses; use a validated, standard approach
- Pricing: transparency about pricing yardstick, standardization to publicly available fee schedule might be desirable¹

The Patient Centered Primary Care Collaborative (PCPCC) is a not-for-profit multi-stakeholder membership organization dedicated to advancing an effective and efficient health system built on a strong foundation of primary care and the patient-centered medical home. The PCPCC represents a broad group of public and private organizations, and believes that evaluations which adhere to these care standards will work to demonstrate that:

- PCMH programs increase the accessibility of primary care and reduce utilization in more expensive sites of care.

- PCMH will improve management of chronic illness, which will increase ambulatory care and Rx, decrease inpatient and emergency department care for preventable complications
- PCMH will improve care coordination and prevent readmissions, admissions due to dropped handoffs¹

The PCPCC created an Accreditation Work Group (AWG) which was tasked with identifying and analyzing opportunities in the PCMH certification and recognition marketplace, and providing its board of directors with recommendations that can be used to help inform PCPCC advocacy efforts concerning public and private sector policies to promote the PCMH model of care. The AWG responded with the following major recommendations.

First, PCMH recognition should ultimately be a “good housekeeping seal of approval” demonstrating achievement of the attributes (outcomes) ensuring consumer confidence in the practice and its clinicians. Recognized practices should be rewarded with increased payment or participation in other “preferred programs.”

Second, the AWG provided guiding principles to improve PCMH, including aligning all recognition programs with the attributes and outcomes of the ideal PCMH, identifying change concepts most essential to achieve these attributes and outcomes, promoting these change concepts, and supporting a pathway for technical assistance in PCMH recognition.

Lastly, the AWG recommends specific improvements in PCMH recognition, including reducing the level of prescriptive specificity to incentivize innovation, focusing on the essential change concepts for high

performing practices, use of aligned measure sets, simplifying documentation and reporting requirements and focusing more on outcomes in performance demonstrations, and recognizing national and regional centers of excellence.³⁷

In 2015, the PCPCC offered a compendium of effectiveness evidence from a wide variety of PCMH programs nationwide. These outcomes span expense, quality, satisfaction, utilization and other domains. Their summary of financial outcomes is reproduced below.

Exhibit 2. Excerpted from PCPCC, 2015³⁶

Program	Outcomes	Date Published	Report Type
Anthem BC ACO	\$4.7 Million (in 6 months)	June 2014	Industry Report
BCBS Michigan PCMH Program	\$26.37 PMPM (2009-2010) \$155 million (2008-2011)	July 2013	Peer-Reviewed
Oregon Coordinated Care Organizations (Medicaid)	18-19% reduction in ED visit spending	Nov 2013, June 2014	Industry Report
Vermont Blueprint for Health (Multi-Payer)	Reduced expenditures in 2012 by: • \$386 PMPY commercial (ages 1-17) • \$586 PMPY commercial (ages 18-64) • \$200 PMPY Medicaid (ages 1-17) • \$447 PMPY Medicaid (ages 18-64)	Jan 2014	Industry Report
CareFirst BCBS PCMH Program (DC, MD, VA)	\$267 million avoided costs (2011-2013)	July 2014	Industry Report
Monarch Healthcare CMS Pioneer ACO (CA)	5.4% reduction in medical costs in 2012 (Medicare)	Jan 2014	Industry Report
Horizon BCBS of New Jersey PCMH Program	\$4.5 million savings (ER visits and hospitalizations) 4% lower total cost of care (all patients) 4% lower cost of care (diabetes patients)	July 2014	Industry Report
Independence BC PCMH Program (PA)	Total cost savings for high risk groups: 7.9% and 11.2% (2010, 2009)	March 2014	Peer-Reviewed

PCMH programs enjoy broad adoption, a robust evidence base, and a position as a foundational model for future primary care reforms. The proliferation of this model has allowed for extensive experimentation with payment models that support a spectrum of FFS-hybrid and value-based arrangements.

Blue Cross Blue Shield of Louisiana: Quality Blue Primary Care (QBPC)

The Quality Blue Primary Care (QBPC) program at Blue Cross and Blue Shield of Louisiana is an excellent example of a major regional payer's attempt to unify a diverse provider community and challenging patient population under a program that measures and rewards both efficiency and quality. From the QBPC program literature, "Blue Cross contracts with primary care physicians and provides, free of charge, a web-based, patient-centric information tool to support the QBPC program. This tool improves the identification and management of chronic diseases that are prevalent and burdensome, while providing practices with data and resources that enable proactive, efficient, high-quality care. The program also equips primary care providers with an outcomes-based payment structure that supports increased value and helps to reduce costs through care coordination. QBPC promotes successful, positive change in physician groups and supports evidence-based clinical and quality improvement."⁹

In 2015, Blue Cross and Blue Shield of Louisiana commissioned a study of QBPC outcomes by Tulane University's School of Public Health. The study was conducted using propensity score-balanced cohorts using a difference-in-difference outcomes framework. The study included data for more than 150,000 attributed members among over 600 participating providers. (Shi, 154) This study found broadly favorable and significant utilization results and generally favorable cost savings where significant. Overall, this program points to the measurable but limited effectiveness of FFS-hybrid programs. According to Dr. Ed Jeffries, QBPC Medical Director, the

program has also had a significant impact on quality metrics.

The QBPC program is defined by three core elements:

- **Population Management:** Integrating a health information exchange tool in practices facilitates population management by aggregating clinical and claims data.
- **Care Process Work Flows and Tools:** Developing and integrating standardized chronic disease management care plans, tools, resources and best practices will transform contracted practices.
- **Continuous Quality Improvement:** Learning opportunities provided through the program enhance physicians' knowledge, competency and performance in the management of patients with cardiovascular (CV) metabolic risk factors. Educational modules are designed with evidence-based clinical content and include practice guidelines, care processes and tools to improve patient population gaps in care.

Exhibit 3. Excerpted from Shi, 2016⁴⁵

Changes of Allowed Amount in QBPC and Control Groups among Blue Cross Members with Chronic Condition (\$ PMPM)

	QBPC	Control	D-in-D Model
	Difference	Difference	
Total (Med+Rx)	50.66	87.33	Favorable ↓
Total (Med)	9.50	45.30	Favorable ↓
ER visits	3.56	1.29	NS
ER-Ambulatory care	3.73	1.22	NS
ER-Admitted	-0.18	0.09	NS
Admissions	-31.58	6.71	Favorable ↓
Admissions with chronic conditions	-9.38	9.45	NS
Office-based visits	0.53	6.55	NS
-PCP/NP	0.89	0.00	NS
-Specialists	-0.36	6.56	Favorable ↓

Changes of Utilization in QBPC and Control Groups among Blue Cross Members with Chronic Condition (per 1,000 members)

	QBPC	Control	D-in-D Model
	Difference	Difference	
ER visits	+10.84	-8.96	Increased
ER-Ambulatory care	+19.20	-8.57	Increased
ER-Admitted	-8.36	-0.39	Favorable ↓
Admissions	-18.84	-4.45	Favorable ↓
Admissions with CVD	-11.05	-0.07	Favorable ↓
Admissions with HTN	-11.21	-0.28	Favorable ↓
Admissions with DM	-3.04	+3.75	Favorable ↓
Admissions with CKD	-1.75	+2.25	Favorable ↓
Office-based visits	+255.35	+282.45	Favorable ↓
-PCP/NP	+45.62	-62.79	Favorable ↑
-Specialists	+209.73	+345.24	Favorable ↓

Blue Cross Blue Shield of Michigan: Physician Group Incentive Program (PGIP)

Blue Cross Blue Shield of Michigan piloted a fee-for-value reimbursement program with its primary care physician community beginning in 2008. “We analyzed the program’s impact on quality and spending from 2008 to 2011 for over three million beneficiaries in over 11,000 physician practices. Participation in the incentive program was associated with approximately 1.1 percent lower total spending for adults (5.1 percent lower for children) and the same or improved performance on eleven of fourteen quality measures over time. Our findings contribute to the growing body of evidence about the potential effectiveness of models that align payment with cost and quality performance, and they demonstrate that it is possible to transform reimbursement within a fee-for-service framework to encourage and incentivize physicians to provide high-quality care, while also reducing costs.”²⁷

This study suggests that the collaborative development of population health programs between major health plans and physician groups can generate measurable spending reductions in total cost of care, as well as improvements in a variety of quality measures.

Exhibit 4. Excerpted from Lemak, 2015²⁷

EXHIBIT 1

Categories Of Activities And Payment Mechanisms In The Blue Cross Blue Shield Of Michigan Physician Group Incentive Program, 2010

Category	Description	Examples	Payments made to:	Payment type
Initiatives	Over 25 initiatives to improve processes and outcomes of care, organized in 5 areas (improvement capacity, conditions, services, core clinical processes, and information technology)	Process improvement teams; generic drug use; patient-centered medical home capacity (extended access, coordination of care, patient registry, patient web portal)	Physician organization	Incentive payments made twice a year
Patient-centered medical home designation program	Annual designation based on reporting on domains of function	12 domains of function measured and reported every six months, plus site visits to verify reported capabilities	Physician	10% increase in evaluation and management office visit fees; potential for additional 10% to designated practices whose physician organizations are benchmark performers for total cost
Support for care management	Care management and self-management provided by ancillary providers	Care coordination provided by navigators, chronic care teams	Physician	Reimburse for care coordination and care management services provided by ancillary providers
Projects	Specific projects aimed at supporting practice transformation	Health Detroit (diabetes self-management), several learning collaboratives, depression management pilot, and others	Physician organization	Incentive payments for the work of participating physician organizations

SOURCE Authors’ analysis of data from Blue Cross Blue Shield of Michigan.

EXHIBIT 2

Estimated Per Member Per Month Spending By Providers For Adult And Pediatric Study Populations, By Blue Cross Blue Shield Of Michigan Physician Group Incentive Program (PGIP) Participation

	Participants												
	Pre-intervention	Post-intervention											
					Nonparticipants			Difference vs. nonparticipants ^a					
					Pre-intervention	Post-intervention							
Spending	All	Early	Late	All ^b			Early	Late	All ^b		% difference, all ^b		
ADULT PATIENTS													
Total	\$325.72	\$ 329.00	\$ 331.35	\$ 329.47	\$329.84	\$ 337.12	-\$4.00	-\$1.65	-\$ 3.53	-1.11	****		
Inpatient	806.60	1,163.41	1,156.92	1,162.00	907.32	1,203.31	6.82	0.33	5.42	1.85	0.5		
Outpatient	106.68	100.76	99.75	100.56	106.68	102.40	-1.65	-2.66	-1.85	-1.85	-1.85	****	
Professional	144.11	141.75	142.27	141.85	139.69	140.42	-3.10	-2.58	-3.00	-2.57	-2.57	****	
PEDIATRIC PATIENTS													
Total	119.17	107.76	105.79	107.49	105.85	99.61	-5.16	-7.13	-5.44	-5.44	-5.44	****	
Inpatient	577.30	566.21	532.79	561.58	599.89	551.62	37.18	3.75	32.54	3.75	5.8		
Outpatient	27.90	27.90	29.28	28.09	27.63	30.42	-2.78	-1.40	-2.59	-2.59	-9.2	****	
Professional	68.71	65.05	64.24	64.93	58.30	57.09	-2.46	-3.26	-2.57	-2.57	-4.0	****	

SOURCE Authors’ analysis of data from Blue Cross Blue Shield of Michigan. NOTES Sample sizes were as follows. Adult patients: for total, outpatient, and professional spending, n = 5,101,946; for inpatient spending, n = 313,458. Pediatric patients: for total, outpatient, and professional spending, n = 1,746,584; for inpatient spending, n = 55,681. Early participants joined the program in or before 2008 (n = 5,019 practices); late participants joined in 2009–11 (n = 2,755 practices). Participants in both groups stayed in the program through 2011. Pre-intervention is 2008; post-intervention is 2009–11. There were 2,991 practices in the nonparticipant group. Results from difference-in-differences analysis (difference in the per member per month spending for PGIP participants post- and pre-intervention, less the difference in the per member per month spending for nonparticipants post- and pre-intervention), controlled for model effects. ^aWeighted average based on enrollee population in PGIP cohort. Model effects are described in the text. ****p<0.001

EXHIBIT 3

Estimated Change In The Average Percentage Of Patients Receiving Evidence-Based Care, By Practices’ Participation In The Blue Cross Blue Shield Of Michigan Physician Group Incentive Program

Measure of evidence-based care	Estimated average percent receiving care				Early participants vs. nonparticipants ^a	
	Early participants		Nonparticipants			
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Percentage-point difference	Percent difference
ADULT PREVENTION						
Breast cancer screening	74.3%	73.8%	70.7%	69.5%	0.7	1.0****
Cervical cancer screening	76.2	78.1	73.0	74.9	0.0	0.0
ADOLESCENT AND PEDIATRIC PREVENTION						
Adolescent well care	47.9	51.8	32.4	26.9	9.4	18.2****
Adolescent immunization	26.7	39.6	21.9	25.4	9.5	23.9****
Child immunization	76.4	70.6	72.9	65.1	2.0	2.8****
Well child visit, 0–15 months	80.1	81.5	56.5	57.9	0.0	0.0
Well child visit, 3–6 years	67.2	70.8	48.6	44.0	8.2	11.6****
CARE FOR PATIENTS WITH DIABETES						
HbA1c screening	79.0	80.8	76.6	75.8	2.6	3.2****
LDL screening	78.8	78.8	76.1	74.4	1.7	2.1****
Nephropathy screening	79.0	79.8	76.0	75.0	1.8	2.2****
Lipid-lowering drug	72.0	67.2	68.2	62.3	1.1	1.7****
ACE INHIBITORS DELIVERED TO PATIENTS WITH:						
CHF	81.7	78.1	83.7	77.4	2.7	3.3
Nephropathy	82.3	79.3	82.4	75.7	3.6	4.6****
Hypertension	80.2	80.5	78.8	77.7	1.4	1.7****

SOURCE Authors’ analysis of data from Blue Cross Blue Shield of Michigan. NOTES Early participants joined the program when it began and stayed in it through 2010. Pre-intervention is 2008; post-intervention is 2009–10. Significance measures the effect of participating in the program. LDL is low-density lipoprotein cholesterol. ACE is angiotensin-converting enzyme. CHF is congestive heart failure. ^aResults from difference-in-differences analysis, controlling for model effects (see the text). ****p<0.001

Blue Cross Blue Shield of Massachusetts: Alternative Quality Contract (AQC)

Blue Cross Blue Shield of Massachusetts launched a new payment model called the Alternative Quality Contract in January 2009. “The contract stipulates a modified global payment (fixed payments for the care of a patient during a specified time period) arrangement. The model differs from past models of fixed payments or capitation because it explicitly connects payments to achieving quality goals and defines the rate of increase for each contract group’s budget over a five-year period, unlike typical annual contracts. All groups participating in the Alternative Quality Contract earned significant quality bonuses in the first year. This arrangement exemplifies the type of experimentation encouraged by the Affordable Care Act. We describe this unique contract and show how it surmounts hurdles previously encountered with other global-payment models.”¹⁵

This early release in the January 2011 edition of Health Affairs describes the framework and preliminary results achieved under this program. The AQC sets a global budget with annual spending growth limits, incentive payments to improve quality based on gated performance targets, and technical support for participating groups.

Exhibit 5. Excerpted from Chernew, 2011¹⁵

EXHIBIT 1

Alternative Quality Contract Ambulatory Quality Measures, Blue Cross Blue Shield Of Massachusetts, 2009

Measure	Gate 1	Gate 5	Weight
PROCESS			
Depression			
Acute-phase Rx	65.3	80.0	1.0
Continuation-phase Rx	49.6	70.0	1.0
Diabetes			
HbA1c testing (2 times)	69.9	83.2	1.0
Eye exams	58.0	72.0	1.0
Nephropathy screening	79.7	91.4	1.0
Cholesterol management			
Diabetes LDL-C screening	85.3	93.8	1.0
Cardiovascular LDL-C screening	85.3	93.8	1.0
Preventive screening/treatment			
Breast cancer screening	77.1	90.0	1.0
Cervical cancer screening	83.5	92.4	1.0
Colorectal cancer screening	65.2	83.3	1.0
Chlamydia screening			
Ages 16–20	45.9	63.7	0.5
Ages 21–24	50.1	67.3	0.5
Adult respiratory testing/treatment			
Acute bronchitis*	—	—	1.0
Medication adherence			
Digoxin monitoring	83.9	91.6	1.0
Pediatric testing/treatment			
Upper respiratory infection	90.6	97.7	1.0
Pharyngitis	83.1	99.6	1.0
Pediatric well-care visits			
<15 months	91.8	99.3	1.0
3–6 years	85.5	99.2	1.0
Adolescent well-care visits	60.0	87.7	1.0
OUTCOMES			
Diabetes			
HbA1c poor control	45.0	4.7	3.0
LDL-C control (<100 mg)	33.4	75.6	3.0
Blood pressure control (130/80)	30.9	47.3	3.0
Hypertension			
Controlling high blood pressure	71.6	82.5	3.0
Cardiovascular disease			
LDL-C control (<100 mg)	33.4	75.6	3.0
PATIENT EXPERIENCE			
Patient experience (c/G CAHPS/ACES)—adult			
Communication quality	91.0	98.0	1.0
Knowledge of patients	80.0	95.0	1.0
Integration of care	80.0	96.0	1.0
Access to care	79.0	96.0	1.0
Patient experience (c/G CAHPS/ACES)—pediatric			
Communication quality	95.0	97.0	1.0
Knowledge of patients	95.0	97.0	1.0
Integration of care	89.0	93.0	1.0
Access to care	85.0	91.0	1.0
Access to care	70.0	90.0	1.0

SOURCE Data from Blue Cross Blue Shield of Massachusetts. **NOTES** Gates are performance targets, with 5 being the highest and 1 being the network median for each measure. HbA1c is glycated hemoglobin. LDL-C is low-density lipoprotein cholesterol. C/G CAHPS/ACES is Clinician and Group Consumer Assessment of Healthcare Providers and Systems/Ambulatory Care Experiences Survey. *This measure was reported in 2010 but was not included in the incentive payments. Thus, no performance targets (gates) were defined.

In July 2012, a second outcomes evaluation of the AQC was published in Health Affairs. “Seven provider organizations in Massachusetts entered the Blue Cross Blue Shield Alternative Quality Contract in 2009, followed by four more organizations in 2010. This contract, based on a global budget and pay-for-performance for achieving certain quality benchmarks, places providers at risk for excessive spending and rewards them for quality, similar to the new Pioneer Accountable Care Organizations in Medicare. We analyzed changes in spending and quality associated with the Alternative Quality Contract and found that the rate of increase in spending slowed compared to control groups, more so in the second year than in the first. Overall, participation in the contract over two years led to savings of 2.8 percent (1.9 percent in year 1 and 3.3 percent in year 2) compared to spending in nonparticipating groups. Savings were accounted for by lower prices achieved

through shifting procedures, imaging, and tests to facilities with lower fees, as well as reduced utilization among some groups. Quality of care also improved compared to control organizations, with chronic care management, adult preventive care, and pediatric care within the contracting groups improving more in year 2 than in year 1. These results suggest that global budgets with pay-for-performance can begin to slow underlying growth in medical spending while improving quality of care.”⁴⁷

“After implementation of the Alternative Quality Contract, average health care spending increased for both intervention and control enrollees, but the increase was smaller for intervention enrollees. Overall in 2009–10, statistical estimates indicated that the intervention was associated with a \$22.58 decrease in average spending per enrollee per quarter, relative to what spending would have been without the intervention (Exhibit 2). This amounted to a 2.8 percent average savings over two years.”⁴⁷

This study was updated again by the original researcher in 2014, concluding “as compared with similar populations in other states, Massachusetts AQC enrollees had lower spending growth and generally greater quality improvements after 4 years. Although other factors in Massachusetts may have contributed, particularly in the later part of the study period, global budget contracts with quality incentives may encourage changes in practice patterns that help reduce spending and improve quality.

Exhibit 6. Excerpted from Song, 2012⁴⁷

EXHIBIT 2

Change In Average Health Care Spending Per Member Per Quarter In The 2009 Intervention Cohort And Control Groups, Blue Cross Blue Shield Of Massachusetts Alternative Quality Contract (AQC)

Category/site and type of care	2009 AQC cohort (intervention)		Non-AQC groups (control)		Between-group difference		Between-group difference by year	
	Pre AQC (2006-08)	Post AQC (2009-10)	Pre AQC (2006-08)	Post AQC (2009-10)	Average 2-year effect	Year 1 (2009) effect	Year 2 (2010) effect	
Total quarterly spending (\$)	803.98	863.26	842.63	924.49	-22.58**	-15.51***	-26.72**	
BY BETOS CATEGORY (\$)								
E&M	182.48	217.66	183.40	222.63	-4.06	-2.22***	-5.32	
Procedures	168.74	188.91	171.26	198.43	-7.00*	-5.96***	-7.62*	
Imaging	95.66	103.23	103.16	116.41	-5.67***	-3.47***	-6.86***	
Test	68.35	78.72	76.15	90.76	-4.24***	-3.72***	-4.28**	
DME	9.96	12.39	11.15	14.01	-0.44	-0.14	-0.72	
Other	49.24	53.04	55.80	57.41	2.19	0.80	3.41	
Unclassified	195.66	201.86	206.06	216.73	-4.48	-0.80	-6.97	
BY SITE AND TYPE OF CARE (\$)								
Inpatient professional	35.55	38.64	35.39	39.22	-0.73	-0.72	-0.51	
Inpatient facility	157.17	165.02	163.54	174.91	-3.53	0.23	-6.23	
Outpatient professional	319.28	367.61	302.66	352.55	-1.57	-0.28	-2.31	
Outpatient facility	218.06	243.02	263.69	306.79	-18.14***	-14.50***	-20.00**	
Ancillary	40.03	41.50	41.71	42.92	0.26	-0.24	0.68	

SOURCE Authors' analysis of 2006–10 Blue Cross Blue Shield of Massachusetts claims data. **NOTES** Sample sizes are presented in Exhibit 1. BETOS categories are Berenson-Eggers Type of Service (BETOS) classification, 2010 version (see Note 20 in text). All spending figures are in 2010 US dollars. E&M is evaluation and management. DME is durable medical equipment. *p < 0.10 **p < 0.05 ***p < 0.01 ****p < 0.001

EXHIBIT 4

Change In Performance On Ambulatory Care Quality Measures In The Intervention And Control Groups, Alternative Quality Contract (AQC), Blue Cross Blue Shield Of Massachusetts

Quality metric	2009 AQC cohort (intervention)		Non-AQC groups (control)		Between-group difference, by year		
	Pre AQC	Post AQC	Pre AQC	Post AQC	Average 2-year effect	Year 1 (2009) effect	Year 2 (2010) effect
Chronic care management (aggregate)	79.1	83.3	79.7	80.0	3.7***	2.6***	4.7***
Cardiovascular LDL cholesterol screening	88.6	91.1	90.2	89.8	3.0***	1.8**	4.5***
Diabetes							
HbA1c testing	89.3	92.4	89.3	90.3	2.1***	1.7***	2.5***
Eye exam	58.5	65.2	61.7	61.2	7.2***	5.5***	8.8***
LDL cholesterol screening	86.6	90.6	86.2	86.9	3.3***	2.8***	3.8***
Nephrology screening	85.1	88.3	83.6	83.7	2.9***	1.6***	4.2***
Depression							
Short-term Rx	67.2	68.0	66.9	66.9	0.5	-1.1	1.6
Maintenance Rx	51.2	53.8	51.1	50.5	2.9*	1.1	3.9*
Adult preventive care (aggregate)	75.7	80.0	72.8	76.5	0.4**	0.1	0.7***
Breast cancer screening	80.2	83.7	79.6	81.1	1.2***	0.6**	1.9***
Cervical cancer screening	87.3	87.7	84.3	85.1	-0.4*	-0.5***	-0.3
Colorectal cancer screening	64.2	71.7	59.7	67.1	0.0	0.0	0.3
Chlamydia screening for enrollees ages 21–24	58.6	65.8	53.9	61.2	0.0	-0.8	0.7
No antibiotics for acute bronchitis	18.7	28.1	19.9	21.1	9.4***	5.5***	13.1***
Pediatric care (aggregate)	79.5	82.8	74.7	77.1	1.3***	0.7**	1.9***
Appropriate testing for pharyngitis	93.9	96.1	81.8	90.5	-6.1***	-3.9***	-7.5***
Chlamydia screening for enrollees ages 16–20	54.8	66.0	51.3	55.9	6.8***	5.4***	8.2***
No antibiotics for upper respiratory infection	94.9	95.5	92.1	93.7	-1.0*	-0.4	-1.8**
Well care							
Babies age <15 months	93.0	94.0	92.5	93.4	0.2	-0.1	0.6***
Children ages 3–6 years	92.3	94.8	90.0	91.3	1.1***	0.6*	1.6***
Adolescents ages 12–21 years	73.8	77.9	69.1	71.9	1.7***	0.1***	2.5***

SOURCE Authors' analysis of 2007–10 quality data, Blue Cross Blue Shield of Massachusetts. **NOTES** The pre-AQC period was 2007–08, and the post-AQC period was 2009–10. For descriptions of intervention and control groups, see the text. Adjusted results are from a propensity-weighted difference-in-differences model controlling for all covariates. Pooled observations were used for the aggregate analyses of chronic care management, adult preventive care, and pediatric care; the analyses were further adjusted for measure-level fixed effects. HbA1c is hemoglobin A1c. LDL is low-density lipoprotein cholesterol. *p < 0.10 **p < 0.05 ***p < 0.01 ****p < 0.001

EXHIBIT 5

Outcome Quality For Alternative Quality Contract (AQC) Groups And The Blue Cross Blue Shield Of Massachusetts Network Average, 2006–10

Condition/outcome measure	BCBS network average (%)				AQC weighted average (%)		
	2007	2008	2009	2010	2009 cohort (2009–10)	2010 cohort (2010)	All AQC (2010)
DIABETES							
HbA1c control (<9 percent)	83.7	79.8	82.0	80.7	80.7	82.0	81.2
LDL cholesterol control (<100 mg/dL)	45.7	51.3	51.3	54.7	57.7	59.5	58.0
Blood pressure control (130/80)	30.9	36.7	38.0	35.8	44.3	49.1	46.0
HYPERTENSION							
Blood pressure control (140/90)	68.4	70.3	69.5	67.5	68.4	73.9	71.1
CARDIOVASCULAR DISEASE							
LDL cholesterol control (<100 mg/dL)	64.2	69.5	69.5	69.5	69.9	71.3	63.9

SOURCE Authors' analysis of 2006–10 claims data, Blue Cross Blue Shield of Massachusetts. **NOTES** Scores denote the percentage of eligible enrollees who met the quality criteria as defined. Scores are weighted by eligible members for each measure and are unadjusted averages. BCBS is the Blue Cross Blue Shield of Massachusetts network. HbA1c is hemoglobin A1c. LDL is low-density lipoprotein cholesterol.

CMS: Comprehensive Primary Care Initiative, CPC Phase

In late 2012, the Center for Medicare & Medicaid Innovation (CMMI) of the Centers for Medicare & Medicaid Services (CMS) launched the Comprehensive Primary Care (CPC) initiative. “This unique collaboration between CMS and other private and public payers—including commercial insurers and Medicaid managed care plans—aims to improve primary care delivery and achieve better care, smarter spending, and healthier people. CPC also aims to enhance provider experience. CPC tests a new approach to care delivery for nearly 500 primary care practices across seven regions. The initiative focuses on helping practices implement five key functions in their delivery of care: access and continuity, planned care for chronic conditions and preventive care, risk-stratified care management, patient and caregiver engagement, and coordination of care across the medical neighborhood.”³⁸

In its second year, CPC experienced more stable participation rates among payers and practices. “CPC’s financial support for participating practices in PY2014 remained substantial and comparable to PY2013 levels, with the median practice receiving enhanced CPC payments (from all participating payers combined) equivalent to 14 percent of 2014 total practice revenue, or \$203,949. Continued refinement of data feedback and the learning supports provided to practices occurred over the period, and, in general, practices were pleased with the changes.”³⁸

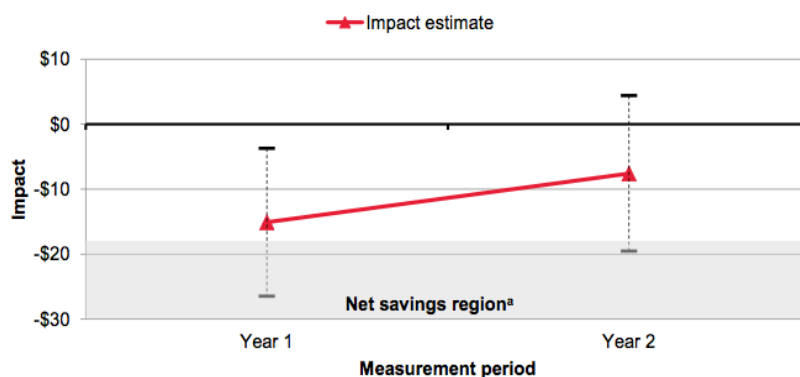
CPC’s care delivery improvements are generating small improvement in outcomes for Medicare FFS beneficiaries. “Between its first and second year, CPC appears to have had small, statistically significant favorable effects on the percentage of respondents in CPC practices choosing the most favorable ratings

for three of six composite measures of patient experience over time relative to respondent ratings of comparison practices: (1) getting timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers supporting patients in taking care of their own health (3.8 percentage points, $p = 0.000$); and (3) shared decision making (3.2 percentage points, $p = 0.006$). Thus, the findings suggest that the substantial changes in CPC practices’ staffing, care processes, and workflows did not worsen patient experience in the short run, and even improved it modestly.”³⁸

However, the global program ROI does not appear to be favorable at this stage. “Although these findings are promising, CPC has not generated savings net of care management fees. The average PBPM fee paid was \$18 (less than the average of \$20 CMS paid for attributed beneficiaries because we follow beneficiaries even if the practice no longer receives fees for them). A one-sided equivalence test does not support the conclusion that reductions in expenditures without fees exceeded the \$18 PBPM payments ($p = 0.87$). The change in average expenditures including the care management fees was \$7 higher for CPC than comparison beneficiaries ($p = 0.27$, 90 percent CI -\$3, \$17). Our estimates based on Bayesian analysis also suggest a near certainty that Medicare FFS expenditures have been reduced relative to what they would have been in the absence of CPC, but only a 4 percent likelihood that those reductions exceed the \$18 PBPM needed to cover the care management fee. CPC had minimal effects on the limited claims-based quality-of-care process and outcome measures we examined.”³⁸

Exhibit 7. Excerpted from Peikes, 2016³⁸

Figure ES.8. Estimated CPC impact on Medicare Part A and Part B expenditures per beneficiary per month, excluding CPC care management fees, all beneficiaries, CPC-wide



This evaluation of the CPC program from Mathematica at the halfway point in the program shows strong participation trends, but limited financial returns. Returns are roughly break even, ROI roughly 1:1 against the \$18 PBPM care management fee funded.

CMS: Comprehensive Primary Care Initiative, CPC+ Phase

Comprehensive Primary Care Plus (CPC+) is a national advanced primary care medical home model that aims to strengthen primary care through regionally-based multi-payer payment reform and care delivery transformation. CPC+ includes two primary care practice tracks with incrementally advanced care delivery requirements and payment options.

Beginning in January 2017, CPC+ supports 2,891 primary care practices, comprising 13,090 clinicians and serving more than 1.76 million Medicare beneficiaries. Practices of all sizes and structures are located in each of the 14 CPC+ regions: Arkansas, Colorado, Hawaii, Greater Kansas City Region of Kansas and Missouri, Michigan, Montana, North Hudson-Capital Region of New York, New Jersey, Ohio and Northern Kentucky Region, Oklahoma, Oregon, Greater Philadelphia Region of Pennsylvania, Rhode Island, and Tennessee.

To support the delivery of comprehensive primary care, CPC+ includes three payment elements:

- **Care Management Fee (CMF):** Both tracks provide a non-visit-based CMF paid per-beneficiary-per month (PBPM). The amount is risk-adjusted for each practice to account for the intensity of care management services required for the practice's specific population. The Medicare fee-for-service

(FFS) CMFs will be paid to the practice on a quarterly basis.

- **Performance-Based Incentive Payment:** CPC+ will prospectively pay and retrospectively reconcile a performance-based incentive based on how well the practice performs on patient experience measures, clinical quality measures, and utilization measures that drive total cost of care.
- **Payment under the Medicare Physician Fee Schedule:** Track 1 continues to bill and receive payment from Medicare FFS as usual. Track 2 practices also continue to bill as usual, but the FFS payment will be reduced to account for CMS shifting a portion of Medicare FFS payments into Comprehensive Primary Care Payments (CPCP), which will be paid in a lump sum on a quarterly basis absent a claim. Given our expectations that Track 2 practices will increase the comprehensiveness of care delivered, the CPCP amounts will be larger than the FFS payment amounts they are intended to replace.

Exhibit 8. Excerpted from CMS, 2017¹³

**Table ES-1
CPC+ Payment Summary**

Track	CMFs	PBIP	Medicare Physician Fee Schedule
1	\$15 average per beneficiary per month (PBPM)	\$1.25 PBPM on quality/patient experience of care and \$1.25 PBPM on utilization performance	Regular FFS
2	\$28 average PBPM, including \$100 PBPM to support patients with complex needs	\$2 PBPM on quality/patient experience of care and \$2 PBPM utilization performance	Hybrid payment: Reduced FFS with a prospective CPCP

**Table ES-4
Track 2 Possible Payment Choices by Year**

Payment ratio	2017	2018	2019	2020	2021
CPCP%/FFS% options available to practices	10%/90%	25%/75%	40%/60%	40%/60%	40%/60%
	25%/75%	40%/60%	40%/60%	40%/60%	40%/60%
	40%/60%	40%/60%	40%/60%	40%/60%	40%/60%
	65%/35%	65%/35%	65%/35%	65%/35%	65%/35%

The CPC+ care delivery requirements are intended to provide a framework for practices to deepen their capabilities throughout the five-year model. These incremental requirements will guide practices through the comprehensive primary care functions as markers for regular, measureable progress to the CPC+ model aims. Track 2 requirements are inclusive of and build upon Track 1, as the framework for delivering better care, smarter spending, and healthier people in CPC+ is the same across both tracks. Track 1 practices that participated in CPC are expected to continue their work of practice change in CPC+ in PY2017. Track 2 includes additional requirements that will aid practices to increase the depth, breadth, and scope of care offered, with particular focus on their patients with complex needs.

Exhibit 9. Excerpted from CMS, 2017¹⁴

-	Track 1	Track 1, CPC Practices	Track 2
1 Access and Continuity	1.1 Achieve and maintain at least 95% empanelment to practitioner and/or care teams. 1.2 Ensure patients have 24/7 access to a care team practitioner with real-time access to the EHR. 1.3 Organize care by practice-identified teams responsible for a specific, identifiable panel of patients to optimize continuity.	Track 1 Requirements 1.1-1.3	Track 1 Requirements 1.1-1.3 + 1.4 Regularly offer at least one alternative to traditional office visits to increase access to care team and clinicians in a way that best meets the needs of the population, such as e-visits, phone visits, group visits, home visits, alternate location visits (e.g., senior centers and assisted living centers), and/or expanded hours in early mornings, evenings, and weekends.
2 Care Management	2.1 Risk-stratify all empanelled patients. 2.2 Provide targeted, proactive, relationship-based (longitudinal) care management to all patients identified as at increased risk, based on a defined risk stratification process and who are likely to benefit from intensive care management. 2.3 Provide short-term (episodic) care management along with medication reconciliation to a high and increasing percentage of empanelled patients who have an ED visit or hospital admission/discharge/transfer and who are likely to benefit from care management. 2.4 Ensure patients with ED visits receive a follow up interaction within one week of discharge. 2.5 Contact at least 75% of patients who were hospitalized in target hospital(s), within 2 business days.	Track 1 Requirements 2.1-2.5	2.1 Use a two-step risk stratification process for all empanelled patients: <i>Step 1</i> - based on defined diagnoses, claims, or another algorithm (i.e., not care team intuition); <i>Step 2</i> - adds the care team's perception of risk to adjust the risk-stratification of patients, as needed. Track 1 Requirements 2.2-2.5 2.6 Use a plan of care centered on patient's actions and support needs in management of chronic conditions for patients receiving longitudinal care management.

Exhibit 9, continued.

-	Track 1	Track 1, CPC Practices	Track 2
3 Comprehensiveness and Coordination	3.1 Systematically identify high-volume and/or high-cost specialists serving the patient population using CMS/other payer's data. 3.2 Identify hospitals and EDs responsible for the majority of patients' hospitalizations and ED visits, and assess and improve timeliness of notification and information transfer using CMS/other payer's data.	Track 1 Requirement 3.1-3.2 + 3.3 Maintain or enact collaborative care agreements with at least two groups of specialists identified based on analysis of CMS/other payer reports. 3.4 Choose and implement at least one option from a menu of options for integrating behavioral health into care.	Track 1 Requirement 3.1-3.2+ 3.3 Enact collaborative care agreements with at least two groups of specialists identified based on analysis of CMS/other payer reports. 3.4 Choose and implement at least one option from a menu of options for integrating behavioral health into care. 3.5 Systematically assess patients' psychosocial needs using evidence-based tools. 3.6 Conduct an inventory of resources and supports to meet patients' psychosocial needs. 3.7 Characterize important needs of sub-populations of high-risk patients and identify a practice capability to develop that will meet those needs, and can be tracked over time.
4 Patient and Caregiver Engagement	4.1 Convene a PFAC at least once in PY2017, and integrate recommendations into care, as appropriate. 4.2 Assess practice capability and plan for support of patients' self-management.	4.1 Convene a PFAC in at least two quarters in PY2017 and integrate recommendations into care, as appropriate. 4.2 Implement self-management support for at least 3 high risk conditions.	4.1 Convene a PFAC in at least two quarters in PY2017 and integrate recommendations into care, as appropriate. 4.2 Implement self-management support for at least 3 high risk conditions.
-	Track 1	Track 1, CPC Practices	Track 2
5 Planned Care and Population Health	5.1 Use feedback reports provided by CMS/other payers at least quarterly on at least 2 utilization measures at the practice-level and practice data on at least 3 electronic clinical quality measures (derived from the EHR) at both practice- and panel-level to inform strategies to improve population health management.	Track 1 Requirements 5.1	Track 1 Requirements 5.1 + 5.2 Conduct care team meetings at least weekly to review practice- and panel-level data from payers and internal monitoring and use this data to guide testing of tactics to improve care and achieve practice goals in CPC+.

Oregon: Medicaid Reform Global Budget Project

In 2012, Oregon began a novel project to reform its Medicaid delivery system by creating 16 coordinated care organizations (CCOs) to care for 90% of its Medicaid enrollees under global budgets.

John McConnell, Director of the Center for Health System Effectiveness at Oregon Health and Science University writes “Using claims data, we assessed measures of access, appropriateness of care, utilization, and expenditures for five service areas (evaluation and management, imaging, procedures, tests, and inpatient facility care), comparing Oregon to the neighboring state of Washington. Overall, the transformation into coordinated care organizations was associated with a 7 percent relative reduction in expenditures across the sum of these services, attributable primarily to reductions in inpatient utilization. The change to coordinated care organizations also demonstrated reductions in avoidable emergency department visits and improvements in some measures of appropriateness of care, but also exhibited reductions in primary care visits, a potential area of concern. Oregon’s coordinated care organizations could provide lessons for controlling health care spending for other state Medicaid programs.”³²

Oregon continues to embark on ambitious experiments to streamline its Medicaid delivery system. McConnell’s study concludes that, like other similar attempts to slow or reduce health care use through enhanced care coordination and accountability, while the results are trending in a favorable direction, much more can and should be done to mitigate medical trend.

Ohio: Comprehensive Primary Care Program

Ohio CPC is a patient-centered medical home program for Medicaid enrollees which is funded by a state innovation model (SIM) grant. The program will go live in the Fall of 2017. CPC practices may be eligible for two payment streams in addition to existing payment arrangements with the Ohio Department of Medicaid and the Medicaid Managed Care Plans: PMPM payment to support activities required by the CPC program, and shared savings payment to reward practices for achieving total cost of care savings.

Exhibit 10. Excerpted from McCarthy, 2016³¹

Metric	Rationale
Generic dispensing rate ¹	- Strong correlation with total cost of care for large practices - Limited range of year over year variability for smaller panel sizes - Aligned with change in providers’ behavior that the program wants to incentivize
Ambulatory care-sensitive inpatient admits per 1,000	- Strong correlation with total cost of care for large practices - Metric that PCPs have stronger ability to influence, compared to all IP admissions
Emergency room visits per 1,000	- Limited range of year over year variability for smaller panel sizes - Aligned with change in providers’ behavior that the program wants to incentivize
Behavioral health-related ² inpatient admits per 1,000	- Reinforces desired provider practice patterns, with focus on the behavioral health population - Relevant for a significant number of smaller practices - Stronger correlation to total cost of care than other BH-related metrics
Episodes-related metric	- Links CPC program to episode-based payments - Incentivizes primary care providers to refer their patients to higher-performing providers

Ohio’s Comprehensive Primary Care (CPC) Program

- Ohio’s CPC Program **financially rewards primary care practices** that keep people well and hold down the total cost of care.
- There is **one program in which all practices participate**, no matter how close to an ideal patient-centered medical home (PCMH) they are today. The program is designed to encourage practices to improve how they deliver care to their patients over time.
- The Ohio CPC Program is designed to be **inclusive: all Medicaid members are attributed or assigned** to a provider.
- In order to join the program, practices will have to **submit an application and meet enrollment requirements**.
- Model scheduled to **launch with an early entry cohort in January 2017** then **open to any primary care practice that meets program requirements in January 2018 and beyond**.

The Ohio CPC program is still under development, but the current model includes a battery of efficiency metrics. These efficiency metrics for primary care triangulate well with those used in other programs.

**Hawaii Medical Service
Association (HMSA): Primary
Care Payment Transformation**

HMSA is an independent licensee of the Blue Cross Blue and Blue Shield Association and the largest insurer in Hawaii. Beginning in April of 2016, several key physician organizations (POs) who contract with HMSA began voluntarily participation in a comprehensive primary care payment model. The POs invited to participate were selected on a basis of geography, size, infrastructure, and leadership. The pilot program was scheduled to run for the remainder of 2016 to allow for evaluation and refinement, leading up to a full network rollout in 2017. The program's goals are to:

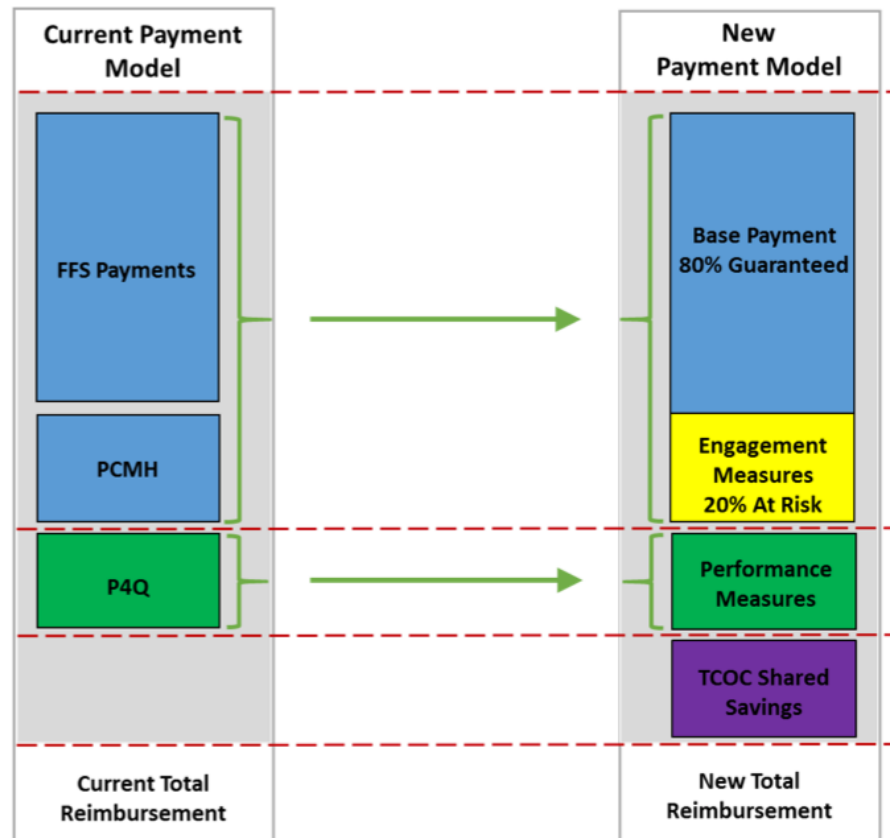
- Compensate physicians for improvements in patient health and well-being, patient satisfaction, timely access to care, and care efficiencies.
- Emphasize the importance of patient engagement, population health, and managing their entire patient panel.
- Reward improvement and raise performance of the entire system.

The program is also designed to be a seamless transition for the patient population. Benefits do not change under the new model – members will continue to pay coinsurance or copayments, and precertification and referral policies remain in place.

The model includes a global, bundled base PMPM payment, of which 80% is guaranteed. The remaining 20% is at risk and is scored annually against specific engagement measures that adjust the subsequent year's base PMPM rate. The model also includes

adjustments based on quality measure performance as well as impact on total cost of care (TCOC). The model moves dollars from traditional FFS, PCMH, and pay-for-quality domains into global base payment, engagement and performance measures, and TCOC domains.

Exhibit 11. Excerpted from HMSA, 2016 ²¹



The performance measures selected for the comprehensive payment model largely reflect the P4Q measures and include a new set of quality measures that place a heavier emphasis on population health. The TCOC component is used to derive a shared savings payment. HMSA selected a global annual trend target where PO's that beat this target, after risk adjustment, are eligible for shared savings disbursements.

As of April 2017, 50% of HMSA's PCPs in a PO have migrated to the comprehensive payment model. This accounts for approximately 40% of HMSA's members. HMSA will continue to closely monitor the program's performance as additional physicians are migrated into the model.

HMSA has developed a cutting-edge comprehensive primary care reimbursement model and committed substantially to its role in their medical management strategy. This model guarantees 80% of total reimbursement based on a PMPM payment, which is supplemented by engagement and performance measures as well as a shared savings program based on total cost of care trend targets.

Direct Primary Care

DPC is an emerging payment and delivery model for primary care. In this model, patients pay full comprehensive monthly fees directly to their PCP and receive services as needed. Traditional insurance does not play a role in the PCP-patient relationship. This allows PCPs to maintain panel sizes less than half of those associated with traditional FFS or FFS-hybrid panels, and in turn reduces physician burn out while allowing them to offer a substantial higher quality of medical care and service to their patients. While a variety of DPC practice modes have proliferated quickly, they have faced legal and regulatory challenges. In 2015, Health Affairs published a general introduction to the conceptual background and regulatory issues involved. “A provision in the ACA allows direct primary care practices to be marketed in the exchanges, as long as they are packaged with an insurance policy that will cover other medical costs, including catastrophic care.”²⁴

For example, one of the most successful DPC practices in the country, Seattle’s Qliance, is sold on Washington State’s health exchange. “Washington is one of at least thirteen states to have passed laws stipulating that direct primary care is not a form of insurance and thus not subject to state insurance regulations, according to the Direct Primary Care Coalition, an advocacy group. In August Sen. Bill Cassidy (R-LA) and Sen. Maria Cantwell (D-WA) introduced the Primary Care Enhancement Act, which includes language similar to that in most of the recent state laws stipulating that direct primary care is not a form of insurance. For doctors already in practice, moving to a direct primary care model can require a financial and emotional leap of faith, says Filer of the AAFP. It requires ‘some willingness to accept significant financial risk’ by leaving insurance reimbursement behind.”²⁴

In a discussion with Dr. Erika Bliss, Qliance’s CEO and a practicing family physician, she described a key ingredient to her model’s success - a patient tiering model with differentiation between “Access” and “Active” rates. Patients at the Access rate pay a lower monthly fee and have access to basic virtual urgent care via tele-health, follow ups, and basic health risk assessments. This tier is intended for healthy individuals with minimal needs. In the event that they enter an episode of acute or prolonged higher need, they can move up to the Active tier and enter into a higher service level. Patients who move into the Active tier remain there for a minimum of 18 months in order to adequately manage a full episode of care, as well as to maintain some controls over adverse selection. Patients cannot simply move up to Active and then back to Access as needs arise and subside month over month. This allows Dr. Bliss to stratify her panels into manageable sub-populations, and tie the delivery model to the payment model while maintaining the service level that direct primary care allows her and her team to provide. After her first ten years developing and refining this business model, Dr. Bliss is excited about the future. “The country is primed,” she says. “The biggest challenge is going to be demand.” As the DPC market continues to expand and evolve, innovators like Qliance aim to help prove that this model is effective and sustainable on a larger scale.

Exhibit 12. Excerpted from State of Reform, 2015⁴⁸

Qliance Savings Data – 2013-14

	Incidents Per 1,000 Qliance patients	Incidents Per 1,000 Non-Qliance patients	Difference (Qliance vs. Other)	Savings per patient per year
ER Visits	81	94	-14%	(\$5)
Inpatient (days)	100	250	-60%	\$417
Specialist Visits	7,497	8,674	-14%	\$436
Advanced Radiology	310	434	-29%	\$82
Primary Care Visits	3,109	1,965	+58%	(\$251)
Savings Per Patient	---	---	---	\$679
Total Savings per 1000 (after Qliance fees)				\$679,000
% Saved Per Patient				19.6%

Data Sources: All claims data (except prescription claims) from carriers for selected large employers; Qliance EMR data; Employer eligibility data.

Claims Attribution: All claims incurred by Qliance patients prior to first Qliance visit were excluded; All employees with any interaction with Qliance included as our patients, even if the employee used another primary care provider (which is possible in some of the plan designs among clients); All claims incurred after any interaction with Qliance included, regardless of employee’s intent to use Qliance as their primary care provider; All non-primary care provider visits included under “specialist” category (such as physical therapy, acupuncture, etc.)

Population: Eligible members in employer-sponsored health plan; Employees only, to remove confounding factors from differences in dependent benefits structures and participation variances among clients.

DPC may not support panel sizes that are scalable at a national level, but the proof points in the success of this model in several disparate markets around the country lend themselves to relevance in more generalized comprehensive payment models. The proven ability of Qliance to improve quality, reduce cost, reduce physician burnout, and offer higher quality face-to-face encounters with physicians is perhaps one of the only true health models of care currently in play in the U.S.

B. Primary Care Payment Rates

National Trends

To better understand the rates of payment for primary care in the U.S. market, it is important to establish background rates and trends throughout the industry. In February 2017, Health Affairs published a comprehensive report on the distributions of U.S. healthcare spending through 2016 with projections through 2025. Total expenditures are projected to grow at an average rate of 5.6% annually through 2025, with physician and clinical services currently growing at 6.3% as of 2015 – at rate which is accelerating. The growth acceleration in physician and clinical services is driven by non-price factors, where price growth itself has declined 1.1% in 2015. This indicates a growing demand for physician and clinical units of care.²⁵

CMS provides another prospective in its National Health Expenditure 2015 Highlights. “In 2015, U.S. health care spending increased 5.8 percent to reach \$3.2 trillion, or \$9,990 per person. The coverage expansion that began in 2014 as a result of the Affordable Care Act continued to have an impact on the growth of health care spending in 2015. Additionally, faster growth in total health care spending in 2015 was driven by stronger growth in spending for private health insurance, hospital care, physician and clinical services, and the continued strong growth in Medicaid and retail prescription drug spending. Spending for physician and clinical services accounts for 20% of overall spending, and increased 6.3% in 2015 to \$634.9 billion. This was an acceleration from growth of 4.8% in 2014 and was the first time since 2005 that the growth rate exceeded 6.0%. As with hospitals, the faster

growth in overall physician and clinical services spending was driven by continued growth in non-price factors. Price growth for physician and clinical services, however, declined 1.1 percent in 2015, driven by the expiration of temporary increases in Medicaid payments to primary care physicians.” These trends indicate a growing demand for primary care, but a decrease in the funding allocated for it in both the public and private sectors. While overall spending on health care increases, this growth is observed in the service categories that team-based primary care works to reduce.¹²

A study published in Health Affairs in July of 2015 provides insights into the proportion of primary care payment that falls to the patient, and how those rates are currently trending. ACA-View, a joint project of the Robert Wood Johnson Foundation and athenahealth, captured data on more than 17 million visits to over 15,000 providers in 2013 and 2014. Patient out-of-pocket obligation grew between 2.7% and 3.5% between 2013 and 2014, and this continued growth is primarily driven by growth in deductibles. To combat medical trend and remain solvent, payers are relying increasingly on high deductible insurance products. Deductible levels increased between 7.9% and 9.5% during the same period.²³

While the demand for primary care increases, patients are encountering growing obstacles to accessing primary care, even when insured. High deductible plans shift more risk to the consumer, and introduce incentives to avoid seeking care for minor issues that may develop into major health problems if left unaddressed. A modern approach to primary care funding must reduce or eliminate barriers to receiving routine or preventive care. The proliferation of high deductible plans in a period of increasing demand for primary care may have dramatic downstream effects on the health of the U.S. population.

Total Cost of Care Measurement and Indexing

A variety of organizations are mounting projects to measure the total cost of care (TCOC) for all patient health and medical services. To date, many of these projects are regional only, and must rely on existing or strategic consortia to achieve the access to and uniformity of relevant data. The Robert Wood Johnson Foundation writes “over the past three years Regional Health Improvement Collaboratives (RHICs), working collectively through the Network for Regional Healthcare Improvement’s (NRHI’s) Getting to Affordability Total Cost of Care initiative, have demonstrated the ability to assess and refine raw regional healthcare cost data, to standardize that data, and to use it in establishing meaningful, local practice level reports and comparisons within and between healthcare markets. This effort demonstrates: 1) Commercial claims data can be refined and standardized to a level of quality sufficient to make meaningful, actionable healthcare cost comparisons. 2) Given access to sufficient and complete commercial claims data, access to which is typically withheld as being proprietary, it is possible to produce standardized data that would allow meaningful cost transparency. Participants have produced Total Cost Index (TCI), Resource Use Index (RUI) and Price Index (PI) comparisons locally, regionally and nationally—at levels of detail capable of informing provider-level insights into healthcare cost and quality.”⁴²

One of this study’s contributing groups, Minnesota Community Measurement (MNCM), has launched their own regional effort to standardize and index TCOC data including more than 1.5 million patients, serviced by 115 medical groups, representing 1,052 clinics across Minnesota. “What’s striking is the difference between medical groups in the middle – a range of more than \$1,500 per patient

annually just between those considered average cost,” said Jim Chase, President of MN Community Measurement.³³

A variety of state- and regional-level efforts are underway to collect and standardized total cost of care (TCOC) data for broad measurement and benchmarking. These programs are still largely disparate, as interoperability and competition present natural market barriers to data sharing. However, the existing programs offer insights that may be portable to other markets under conservative assumptions.

AHRQ: Medical Expenditure Panel Survey (MEPS)

While national data sets containing TCOC data for commercial populations are sparse, the Medical Expenditure Panel Survey (MEPS) project lead by AHRQ provides one of the most complete pictures publicly available. MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

The survey consists of two major components, one each for households and insurance/payers. The Household Component (HC) collects data from a sample of families and individuals in selected communities across the United States, drawn from a nationally representative subsample of households that participated in the prior year's National Health Interview Survey (conducted by the National Center for Health Statistics). The Insurance Component (IC) collects data from a sample of private and public sector employers

on the health insurance plans they offer their employees. The survey is also known as the Health Insurance Cost Study. HC and IC estimates and projections are available on the MEPS Web site in tabular form for national, regional, state, and metropolitan areas, as well as in publications using IC data and interactive data tools, however IC data files are not available for public release. The following exhibits provide examples of service type and state level distributions inferred for the U.S. population. While raw data tables are not made available for public release, these exhibits provide pre-aggregated benchmarks and indices that can be used by researchers. The exhibits below provide an array of demographic distributions and perceived health status variables against expenditures by payment source for the U.S. population as of 2014. This data may be useful in setting regional prices indices, as well as indices for social determinants of health for use in a CPCP model.

Exhibit 13. Excerpted from AHRQ, 2009²

Expenditure Category	Per Capita Expenditures	2016: Total Population								
		Percentage of Payments from:								
		OOP	Private	Medicare	Medicaid	Tricare	VA	Workers Comp	Other Public	Other
Hospital	2,545	4.07	47.07	30.33	12.76	0.53	2.93	1.48	0.24	0.59
Physician	1,652	9.49	55.54	19.52	8.32	1.67	0.41	3.57	0.48	0.99
Dental	466	42.94	47.48	0.16	6.99	0.00	0.01	0.00	0.26	2.15
Other Provider	432	21.84	40.60	20.56	11.12	0.00	0.07	3.70	0.25	1.85
Home Health	380	4.45	10.56	33.99	46.47	0.07	0.82	0.26	3.33	0.05
RX	1,305	19.51	42.80	21.52	11.85	1.02	1.38	1.58	0.32	0.02
Other Medical	148	49.90	9.12	39.21	0.00	0.00	0.00	0.73	0.18	0.85
Total	6,929	13.00	45.09	23.84	12.62	0.79	1.48	1.95	0.48	0.74

Exhibit 14. Excerpted from AHRQ, 2010³

Table 1. Total Health Services - Percent of persons with an expense, mean expense per person with an expense, and distribution of expenses, by source of payment, United States, 2010 (25 states^a are shown separately)

State	Unweighted sample size		Population (1,000s) ^e	Percent with an expense ^c	Mean per person with an expense ^c	Percent distribution of total expenses by source of payment ^{b,c}			
	All persons	Persons with an expense				Out of pocket	Private insurance ^d	Medicare	Medicaid
United States	31,228	24,786	308,574	84.6	4,838.6	14.2	40.1	25.7	10.4
California	5,041	3,584	30,800	75.8	3,946.3	14.8	37.8	24.9	14.3
Texas	2,918	2,052	21,492	74.7	4,569.2	12.4	39.4	26.7	10.2
New York	1,814	1,354	15,687	79.2	4,583.8	9.4	44.2	21.3	16.4
Florida	1,845	1,447	14,962	81.6	4,921.2	16.8	31.5	27.6	8.4
Illinois	1,189	1,010	10,617	88.9	5,671.4	12.5	50.7	15.9	14.1
Pennsylvania	946	797	10,275	87.2	4,686.2	12.6	46.9	29.0	6.4
Ohio	1,155	976	9,400	84.6	4,612.3	11.5	37.8	25.7	14.6
Michigan	984	837	8,225	85.3	5,127.7	12.7	44.0	22.3	14.9
Georgia	1,071	847	8,065	82.1	3,715.1	17.8	37.2	25.3	6.5
North Carolina	804	627	7,574	86.7	4,132.9	16.1	41.5	24.3	8.7
New Jersey	948	760	7,273	82.3	4,996.6	12.9	43.2	19.6	14.7
Virginia	925	795	6,517	87.3	4,845.8	13.7	35.9	32.3	6.6 *
Arizona	560	435	5,459	80.4	3,450.6	16.6	29.8	13.9	33.3
Massachusetts	452	397	5,428	90.1	4,644.1	13.3	47.4	18.7	11.6 *
Washington	873	730	5,337	88.5	3,758.8	16.9	47.4	12.5	10.9 *
Indiana	633	537	5,304	85.3	3,366.2	17.4	34.4	24.7	14.8 *
Tennessee	484	390	5,248	83.0	3,415.4	19.3	34.1	24.9	14.3
Missouri	565	474	4,846	84.7	5,158.5	12.2	38.8	26.8	10.0 *
Maryland	509	417	4,760	85.0	4,448.1	11.6	40.1	23.2 *	10.3 *
Wisconsin	579	522	4,519	91.6	4,873.4	12.6	43.8	34.1	4.0 *
Minnesota	528	467	4,146	89.6	3,822.2	16.2	42.7	17.9	6.4
Colorado	369	306	4,062	89.4	3,623.1	16.4	35.3	27.7	13.0
Alabama	417	342	3,946	81.4	3,714.1	16.6	41.7	27.2	6.2
South Carolina	376	296	3,847	83.0	3,320.7	12.5	40.5	24.1	12.2
Louisiana	369	307	3,758	86.5	5,418.3 *	13.3 *	56.3	10.5 *	12.8 *

Exhibit 15. Excerpted from AHRO, 2014⁴

Table 1: Total Health Services-Median and Mean Expenses per Person With Expense and Distribution of Expenses by Source of Payment: United States, 2014

Population Characteristic	Population (in thousands)	Percent with expense	Per person with an expense		Total Expenses (in millions)	Percent distribution of total expenses by source of payment				
			Median	Mean		Out of pocket	Private insurance ^a	Medicare	Medicaid	Other ^b
Total	318,440	85.1	1,373	5,531	1499365	12.4	39.3	28.4	11.5	8.3
Age in years										
Under 65	270,479	83.1	1,040	4,430	996,059	12.9	51.9	10.2	15.7	9.3
Under 5	19,912	90.7	599	2,588	46,742	5.8	60.7	0.1*	25.8	7.6
5-17	53,888	86.1	632	2,294	106,395	14.9	53.9	0.3*	27.4	3.4
18-44	112,965	76.4	893	3,522	303,930	14.8	53.1	5.0	19.3	7.8
45-64	83,714	88.5	2,165	7,274	538,992	12.0	50.0	16.0	10.5	11.4
65 and over	47,961	96.4	4,875	10,890	503,306	11.5	14.5	64.4	3.1	6.5
Sex										
Male	155,866	80.9	1,138	5,427	684,561	12.0	39.1	28.2	9.2	11.5
Female	162,574	89.1	1,606	5,622	814,804	12.8	39.5	28.6	13.5	5.6
Race/ethnicity										
Hispanic	55,840	74.7	725	3,367	140,378	10.7	33.6	21.5	24.7	9.6
White, Non-Hispanic	194,571	89.9	1,818	6,287	1099692	13.5	40.6	29.9	8.2	7.8
Black, Non-Hispanic	38,926	79.3	1,061	5,385	166,292	7.0	33.9	28.2	19.7	11.3
Amer. Indian/AK Native/Multi. Races, non-Hisp.	11,040	86.0	1,080	4,772	45,312	9.5	35.3	24.3	20.4	10.5
Asian/Hawaiian/Pacific Islander, non-Hispanic	18,063	78.0	816	3,385	47,691	14.0	49.9	19.2	12.3	4.6
Health insurance status ^c										
<65, Any private	182,184	87.7	1,180	4,421	706,357	14.8	73.1	3.1	4.5	4.4
<65, Public only	57,233	85.6	806	4,892	239,662	4.8	0.0*	33.4	52.2	9.6
<65, Uninsured	31,063	51.8	445	3,109	50,040	24.2	0.0*	0.0*	0.0*	75.8
65+, Medicare only	16,406	94.9	4,315	9,221	143,614	13.3	0.0*	76.9	0.0*	9.8
65+, Medicare and private	25,605	97.8	5,047	11,172	279,853	12.9	25.1	56.5	0.8	4.8
65+, Medicare and other public	5,096	96.1	7,302	15,538	76,072	2.7	0.0*	73.0	17.6	6.7*
65+, No Medicare	--	--	--	--	--	--	--	--	--	--
Poverty status ^d										
Negative or Poor	47,182	80.1	962	6,018	227,428	6.4	11.0	33.7	32.7	16.2*
Near-poor	14,819	82.9	1,579	7,802	95,848	7.1	23.0	45.7	18.3	5.9
Low income	44,510	79.1	1,123	5,906	207,984	9.5	22.0	45.5	13.7	9.3
Middle income	92,119	83.9	1,205	4,731	365,538	13.4	42.7	26.4	7.9	9.6
High income	119,811	90.6	1,788	5,553	602,567	16.0	56.6	19.0	3.8	4.7
Census Region										
Northeast	56,441	86.4	1,709	6,534	318,452	10.2	36.7	28.0	14.7	10.4*
Midwest	67,894	89.1	1,523	6,094	368,749	12.5	41.7	27.4	11.7	6.7
South	118,991	83.2	1,243	5,006	495,836	12.9	37.4	31.6	9.9	8.2
West	75,114	83.6	1,276	5,039	316,328	13.9	42.0	25.1	10.6	8.4
Perceived Health Status										
Excellent	103,482	81.7	755	2,457	207,702	18.7	51.9	12.9	10.5	6.0
Very Good	102,672	85.2	1,320	4,172	365,160	16.5	50.4	18.3	7.2	7.6
Good	77,142	86.0	2,022	6,397	424,211	11.6	40.1	28.1	11.6	8.6
Fair	26,230	92.7	4,794	12,408	301,849	9.1	29.9	39.8	14.4	6.9
Poor	8,397	96.4	10,754	24,142	195,345	5.5	18.8	46.0	15.9	13.8*
Missing	--	--	--	--	--	--	--	--	--	--

Primary Care as a Proportion of Total Cost of Care

In 2009, the Rhode Island Office of the Health Insurance Commissioner (RI OHIC) developed “system affordability priorities” for Rhode Island’s commercial insurers, including a directive to almost double the portion of their medical expenses devoted to primary care. A study of comparative primary care financing focusing on Rhode Island payers was published in *Health Affairs* in 2010. Author C. F. Koller writes, “there is compelling evidence that population-based quality and cost measures, both nationally and internationally, are positively correlated with the supply of primary care physicians. Although health plans cannot directly influence primary care supply, they can spend more money on primary care, creating a stronger primary care system that results in either more primary care physicians or more highly compensated ones (which presumably would also influence supply.) In 2008 Rhode Island insurers spent 5.9% of their medical services expenditure on primary care, which compared poorly to benchmark data from other high-performing health systems identified by the Commonwealth Fund’s Commission on a High-Performance Health System. For example, Geisinger Health System’s health plan in Pennsylvania reported using nearly 9 percent of its total spending on primary care.”²⁶

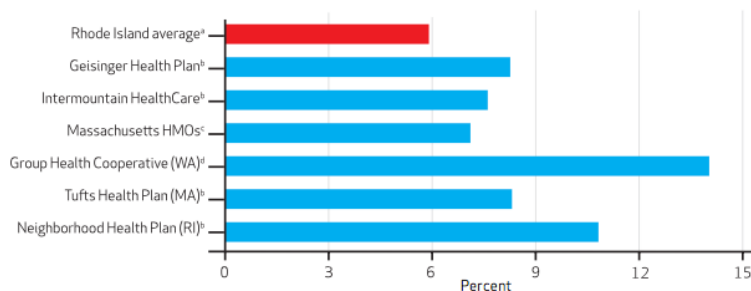
The RI OHIC established a goal of 11% as the target for total medical expenditures dedicated to primary care. To support this goal, regional payers responded through a combination of investments in medical home models, information infrastructure and enhancements to electronic health record (EHR) systems, chronic care sustainability programs, and general team based care initiatives. These types of investments are integral to the success of value-based and comprehensive payment models, and

serve as an example of the infrastructure for which increased primary care investment should be used.²⁶

Exhibit 16. Excerpted from Koller, 2010²⁶

EXHIBIT 1

Primary Care Spending As A Percentage Of Total Medical Spending, Rhode Island Average (Baseline) And Benchmarks From Six Large Insurers



SOURCES Office of the Health Insurance Commissioner, Rhode Island; and various other sources (see below). **NOTES** The Rhode Island average is the mathematical average of the two largest commercial insurers in the state, Blue Cross Blue Shield of Rhode Island and UnitedHealthcare of New England. The Rhode Island target is 10.9 percent, which is the current rate plus five percentage points, as set in affordability standards. ^aPlan-specific spending rates are greatly influenced by membership mix. ^bSource: Self-reported by insurers. ^cSource: Oliver Wyman Study, 2008 Sep, based on commercial, fully insured health maintenance organizations (HMOs) only. Primary care includes obstetrics/gynecology; excludes pay-for-performance. ^dSource: Wagner EH, director of the MacColl Institute for Health-care Innovation, Center for Health Studies, Group Health Cooperative. Group Health Cooperative is a group-model HMO with owned facilities, like Kaiser Permanente.

A growing number of research projects nationwide are contributing cost-benefit information to this evidence base. In an earlier attempt to drive investments in primary care, the RI OHIC mandated an increase in primary care spending from 5.4% to 8% between 2007 and 2011. This initiative reported a 23% increase in primary care spending associated with an 18% reduction in total spending—a 15-fold return on investment. “Portland State University completed a 2016 study of Oregon’s Patient Centered Primary Care Home (PCPCH) program and found every \$1 increase in primary care expenditures as part of the PCPCH model resulted in \$13 in savings in other health care services, including specialty, emergency room, and inpatient care.” While these results are more pronounced than would be expected in broader programs, they help to justify a more modest investment. The first annual Starfield Summit, held in April of 2016, brought together a variety of thought leaders, researchers and industry disruptors to share innovative work in primary care reform. This conference yielded an annotated bibliography that offered several papers which together suggest an increase in the proportion of primary care payment to 10-12%, a level which is also supported by the AAFP.^{19, 5}

Qliance, an innovative direct primary care group in the northwest, demonstrated the dramatic impact that a non-transactional, fully non-FFS primary care model can have on the secondary care system. In 2010, Qliance released an outcomes study of 7 large self-funded groups and the impact that the direct primary care model had on their population health costs. By increasing the per-capita monthly health care cost from \$31 for FFS to \$64 for Qliance’s D-PCMH product, the aggregate non-primary care costs for the groups decreased from \$290 to \$194 per-capita monthly. By roughly doubling the investment in primary care in a non-FFS model, the non-primary care costs for these groups dropped by 33%.

A 2012 study published by The Commonwealth Fund projected positive and substantial impacts on the total health care system by increasing Medicare fees for primary care ambulatory visits by 10% for five years starting in 2011. “Using a simulation model with real-world parameters, we evaluate the effects of a permanent 10 percent increase in these fees. Our analysis shows the fee increase would increase

primary care visits by 8.8 percent, and raise the overall cost of primary care visits by 17 percent. However, these increases would yield more than a sixfold annual return in lower Medicare costs for other services—mostly inpatient and postacute care—once the full effects on treatment patterns are realized. The net result would be a drop in Medicare costs of nearly 2 percent. These findings suggest that, under reasonable assumptions, promoting primary care can help bend the Medicare cost curve.”⁴¹

The evidence base supporting non-traditional investments in primary care is also growing. While total cost of care is a key metric, other measures of quality, access, and efficiency are also paramount. In a 2013 study of innovations piloted by San Francisco General Hospital and Trauma Center (SFGH), two initiatives were designed to increase patient access to specialty care, reduce costs, and enhance the quality of specialty care: eReferral (an electronic referral system) and specialty workgroups. SFGH is part of a city-wide integrated health system which provides primary, specialty and hospital care for vulnerable populations. SFGH provides 20% of the city's inpatient care, and provides more than 500,000 ambulatory visits each year. “SFGH specialty workgroups were designed to foster mutual understanding, communication, and collaboration between primary care and specialty care providers. The workgroups sought to improve communication among providers after specialty clinic visits by making specialty notes more readily available in the EHR and by standardizing note content. The workgroups also developed and implemented consensus guidelines for discharge from specialty care, improved the quality of the eReferral exchange, and developed registries and panel management for specialty

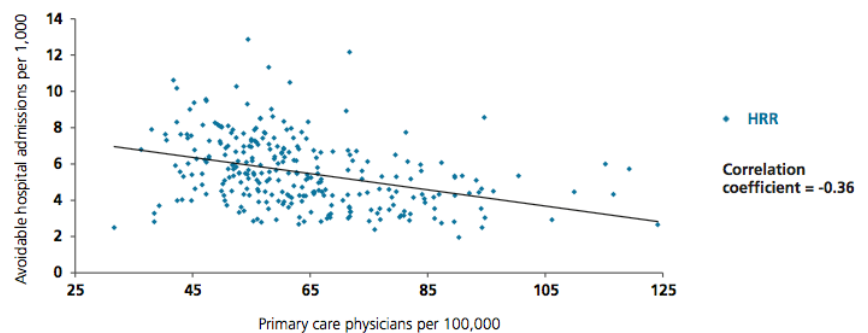
clinics, all efforts to enhance patient access to specialty care.”¹¹

Because of these initiatives, SFGH saw an increase in orthopedic surgery clinical note dictation from 43% in July 2012 to 81% in April 2013, as well as a reduction of wait times by 53.3% from December 2012 to April 2013. These infrastructure-based investments in primary care and PCP-specialist collaboration are critical to the success of the overall healthcare system. They do not simply reduce medical costs, but improve patient experience, reduce medical errors, and allow PCPs and specialists to collaborate more effectively. Comprehensive primary care payment rates must be sufficient to support these types of innovative infrastructure projects.

The UnitedHealth Center for Health Reform and Modernization published a study in 2014 which examined a variety of relationships between primary care practice patterns and access with population health outcomes. In particular, the researchers found a measureable negative correlation between primary care physician supply and avoidable inpatient admissions and avoidable emergency department visits.⁴⁹

Exhibit 17. Excerpted from UNH, 2014⁴⁹

Exhibit 2: Avoidable hospital admissions and primary care physician supply



These patterns help to demonstrate that primary care physicians contribute directly to high-quality, efficient care across the delivery system. “In areas with a greater supply of primary care physicians, there was lower utilization of costly and avoidable hospital services. Among Health Referral Regions (HRRs), geographic units with similar hospital referral patterns, those with a greater number of primary care physicians per 100,000 people had lower rates of avoidable hospital admissions and emergency department visits.” Comprehensive payment for primary care seeks to reimburse primary care delivery for the system-level value that it provides. The projected shortfall of primary care physicians will undoubtedly continue to strain other segments of the overall healthcare system, resulting in less efficient, more costly care. Investments in primary care are essential to maintaining a robust healthcare market and workforce.⁴⁹

There is a growing evidence base to support increased investment in primary care spending to lower total cost of care and improve quality and efficiency system-wide. Moreover, models focusing on value-based and non-FFS payment for primary care are yielding results that demonstrate reductions in cost of care as a function of investments in primary care, with top end estimates that link 20-100% increases in primary care spending with 18-33% reductions in total health care spending. The RI OHIC reported that high performing health systems spend on average 9% of total health care expenses on primary care in the current FFS model. A modest increase to into the range of 10-12% of total health care costs allows for necessary infrastructure investment and expanded comprehensiveness of care.

C. Population Risk Adjustment

Risk adjustment is a critical component in population health and managed care. Patients with higher concurrent or prospective risk of increasing medical needs must be balanced against patients with low risk. Adverse selection of a population with an improper balance can lead to severe issues with quality of care and efficiency of practice for a primary care physician, as well as have an adverse impact on overall patient outcomes and health care system burden. In a 2016 position paper on global payment for primary care, the AAFP writes, “both the primary care global fee and the care management fee should be risk stratified based on patient complexity (e.g. comorbidities, cognitive impairment, self-care ability as measured by activities of daily living), patient demographics (e.g. age, gender), and other factors, such as sociodemographic factors that are social determinants of health.”⁵

There are a wide variety of approaches to risk adjustment being used in the industry today. For example, the Blue Cross Blue Shield of Massachusetts’ AQC program incorporates DxCG models into a multi-tiered risk abatement model. “The Alternative Quality Contract incorporates several means of mitigating financial risk. First, each group’s budget is adjusted annually for changes in patients’ health status (measured concurrently) using the Diagnostic Cost Groups (DxCG) risk-adjustment model. In the absence of ongoing risk adjustment for budgets, provider groups could easily lose money if they encountered high adverse patient selection—that is, a higher-than-typical proportion of sicker patients.”¹⁵

CMS’ CPC+ program, which began in January of 2017, ties the value-based component of its reimbursement model to a 5-tier risk stratification scheme. The per beneficiary per month supplement is

scaled based on the relative percentile into which a patient falls.

Exhibit 18. Excerpted from CMS, 2017¹³

Table ES-3
Risk Tier Criteria and CMF Payments (per Beneficiary per Month)

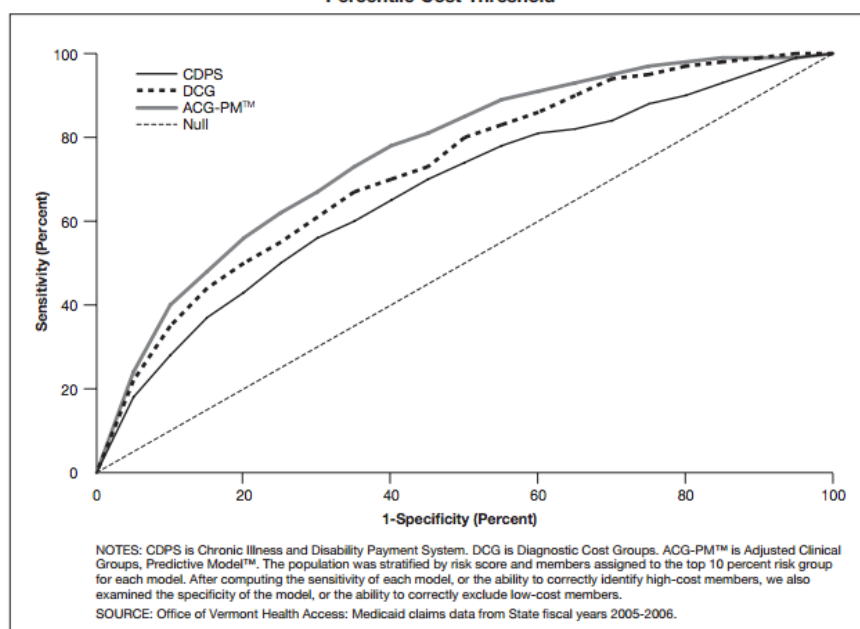
Risk tier	Risk score criteria	Track 1	Track 2
Tier 1	Risk score < 25th percentile	\$6	\$9
Tier 2	25th percentile ≤ risk score < 50th percentile	\$8	\$11
Tier 3	50th percentile ≤ risk score < 75th percentile	\$16	\$19
Tier 4	Track 1: Risk score ≥ 75th percentile Track 2: 75th percentile ≤ risk score < 90th percentile	\$30	\$33
Tier 5 (Track 2 only)	Risk score ≥ 90th percentile or Dementia diagnosis	N/A	\$100

The CPC+ program uses the CMS Hierarchical Condition Categories (CMS-HCC) model to perform risk adjustment. The CMS-HCC model is an open source predictive model which places most of its weight on age and gender adjustors and generally has much lower predictive power than other groupers. However, because of these limitations it is exceptionally portable among diverse populations.

A study published in the Health Care Financing Review in 2008 explored the comparative predictive power of the three most common risk adjustment models used in Medicaid. “Using claims data from the State of Vermont, we compare the ability of three pre-existing health risk predictive models to predict the top 10 percent of members with chronic conditions: Chronic Illness and Disability Payment System (CDPS), Diagnostic Cost Groups (DCG), and Adjusted Clinical Groups Predictive Model™ (ACG-PM™). We find that the ACG-PM™ model performs best. However, for predicting the very highest-cost members (e.g., the 99th percentile), the DCG model is preferred.”⁵⁰

Exhibit 19. Excerpted from Weir, 2008⁵⁰

Evaluation of Model Performance Using the Receiver Operating Characteristics (ROC) Curve: 90th Percentile Cost Threshold



The Chronic Illness and Disability Payment System (CDPS) is a diagnostic classification system that Medicaid programs can use to make health-based capitated payments for TANF and disabled Medicaid beneficiaries. The model weights are provided in an open source format. Both the DxCG and ACG systems are commercially available on a fee schedule. Neither is open source, and both require a high degree of prescriptive data infrastructure to maintain.

Several hybrid models for primary care risk adjustment have been developed and studied in recent years. The AAFP writes, “one suggested approach that could be applied in practice would define complexity as “interference with standard care and decision making by diagnostic uncertainty, system severity, impairments, lack of social safety, lack of participation, difficulty engaging care, disorganized care, and difficult patient-clinician relationships. The Minnesota Complexity Assessment Method (MCAM) is one such model. The MCAM specifies certain domains for assessment of patient complexity that includes illness, readiness (to engage treatment), social, health system, and resources for care. This allows clinicians to assess patient complexity and identify areas of intervention. The AAFP believes this tool represents the best approach to assess complexity that is not captured through a review of disease burden, and it can better direct care teams in patient management. This model can be used in conjunction with a claims-data driven risk adjustment algorithm and used to complete a more comprehensive and primary-care oriented picture of patient health needs. The MCAM can be administered by a primary care physician or a member of a care team and stored as an electronic health record, and made available to other physicians or specialists as needed. The administration and maintenance

for this type of system would be financed by the infrastructure component of the comprehensive payment.⁵

Another prominent approach to hybrid risk modeling is the Primacy Care Activity Level (PCAL) model, developed in cooperation by the UMass Department of Health Sciences and The Boston University Department of Economics, with support from Verisk Health and a grant from The Commonwealth Fund. A series of articles (Ash and Ellis, 2012; Ellis and Ash, 2012; Vats et al. 2013) has described and evaluated “good enough” – imperfect but useful and implementable – risk adjustment models for the primary care payment. The PCAL payment model is its fifth year of use by one health plan to pay PCPs, and was recently recalibrated in preparation for its use by the Massachusetts Medicaid (MassHealth) program in 2015.¹⁸

To specify the PCAL model, each outcome is separately predicted from age, sex, and diagnoses. The PCAL outcome as a subset of all costs that proxy the bundled payment needed for comprehensive primary care. Other expected outcomes are used to establish targets against which actual performance can be fairly judged. The researchers modeled bundled payment to support expected primary care activity levels (PCAL) and 9 patient outcomes for performance assessment using MarketScan’s claims-based data on 17.4 million commercially insured lives. “The PCAL model explains 67% of variation in its outcome, performing well across diverse patient ages, payers, plan types, and provider specialties. It explains 72% of practice-level variation. In 9 performance measures, the outcome-specific models explain 17%–86% of variation at the practice level, often substantially outperforming a generic score like the one used for full capitation payments in Medicare: for example, with grouped R2’s of 47% versus 5% for predicting “prescriptions for antibiotics of concern.”¹⁸

In a separate study, the same researchers evaluated PCAL models using 457,000 patients assigned to 436 primary care physician panels in a multipayer medical home implementation with commercially insured, Medicare, and Medicaid patients. “A sensitivity analysis is conducted of nine alternative bundles of services - narrowly to broadly defined- potential useful for primary care payment, and evaluated for their predictiveness, implied financial risk to PCPs, and payment stability over time. Three alternative weighted sums of top-coded services were developed to approximate the burdens facing PCPs for managing well the primary care needs of their patients. For the sample of 436 midsized practices with 500 to 5000 assigned patients, the preferred PCAL model used 653 parameters in a sample of 17.4 million, achieving an R2 of 67% in average spending at the individual level.”⁶

The author continues, “our idea for specifying the proxy outcome Y for PCAL is to use resources spent on other kinds of care to ‘signal’ the need for primary care services, for example, to handle simple problems in-house that might otherwise be referred out; to avert crises by attentively managing chronic problems; or to coordinate care for patients during and after hospitalizations and other crises. Specifically, we define Y for each person during a year as the following dollar amount:

$$\begin{aligned} Y = & \text{All Primary Care Service \$} \\ & + 0.06 * \text{Specialty Care Related \$} \\ & + 0.06 * \text{Hospital Care Related \$} \\ & + 0.17 * \text{ED Visit Related \$} \\ & + 0.12 * \text{Prescription Drug Related \$} \\ & + \$ 65 \end{aligned}$$

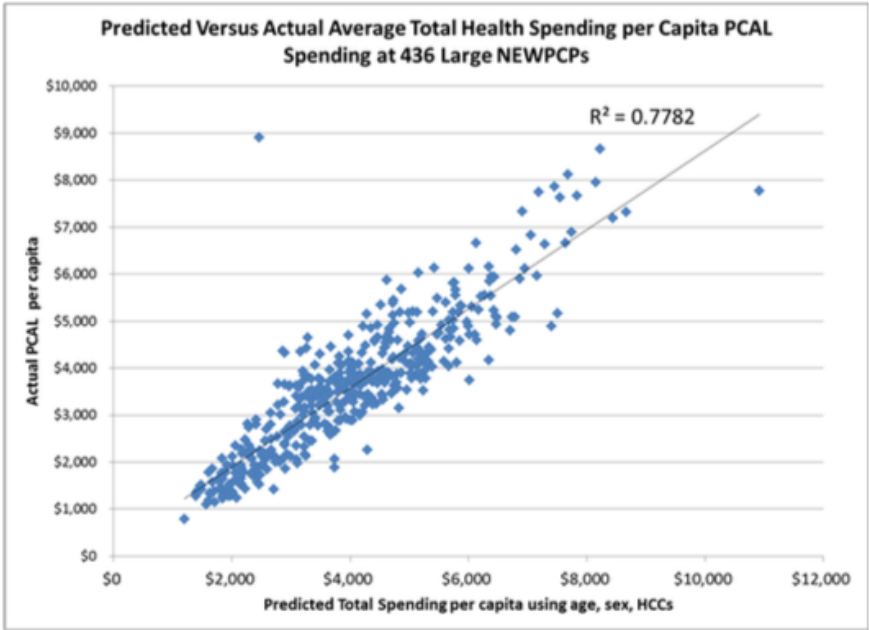
These parameters were derived from a variety of source. The researchers consulted with 5 practicing primary care clinicians, asking them to estimate how much of their

time was spent on various activities. “We then calculated the fractions of observable spending variables needed to reflect these allocations. For example, given that approximately 50% of PCP time is spent on core primary care services and 10% (1/5 as much) on managing prescription drugs, we calculated that 12% of prescription drug spending needed to be included in Y to make pharmacy spending contribute approximately 1/5 as much as core primary care spending. Thus, for every \$100 of pharmacy spending in the data we added \$12 to Y, envisioning that a comprehensive primary care provider would have needed that level of resources to manage the medications. Before making these allocations, we had top-coded each subcomponent at its 99.9th percentile; this limited the effect of extreme outliers while only reducing the overall mean by 1.7%. We included \$65 to recognize fixed overhead costs of activities such as monitoring, email, or phone consultations, and encouraging prevention, even for people with no current claims. We frequently shared the implications of choices with our clinician panel, thereby allowing practicing doctors to examine the face validity of the resulting relationships. For example, before settling on the above formula for Y, our physicians reviewed and verified the plausibility of the resulting normalized PCAL scores for several dozen patient illness profiles in which various medical conditions were added to or subtracted from realistic patient profiles.”⁶

The PCAL model works as a bridge from the FFS picture of primary care to the comprehensive payment picture. Here, the expected cost of care associated with primary care activities is modeled as a linear combination of the existing FFS payment categories. In this way, a population’s total health expenditures can be modeled as a function of those associated with and influenced by primary care activities.

The analysis below demonstrates the predictive power of this approach to estimate the total cost of care burden based on limited demographic and diagnosis data.

Exhibit 20. Excerpted from Ash, 2012⁶



Below is a high-level summary of the models we’ve discussed in this section. This exhibit provides the key features of each model system and notes its key strength as applicable to building a comprehensive primary care payment.

Exhibit 21. Predictive Model Comparison

Model	Source/Cost	Infrastructure	Key Features
ACG	Commercial/Fee	Prescriptive	High predictive power, multiple models
DxCG	Commercial/Fee	Prescriptive	High predictive power, multiple models
CDPS	Public Domain	Prescriptive	Moderate predictive power, open source
CMS-HCC	Public Domain	Prescriptive	Low predictive power, open source
PCAL	Public Domain	Adaptive	Primary care oriented, FFS bridge
MCAM	Public Domain	Adaptive	Complexity assessment for primary care

Population health risk adjustment models play a critical role in avoiding adverse selection to balance panels and allocate primary care resources. While several popular commercially available models dominate the space, open source and hybrid models offer more utility for research and demonstration projects. The MCAM model, which is endorsed by the AAFP, provides a framework for multi-level assessment that accounts for both evidence-based risk and heuristics for barriers to care. The PCAL model offers a strong quantitative framework for estimating primary care-specific burden based on limited demographic and diagnostic information. PCAL also offers a degree of population specific refinement and tuning without purchasing commercial software.

D. Social Determinants of Health

A 2014 study published in the *Journal of Health Economics* investigated the relationship between patients' primary care costs and their age, gender, deprivation and alternative measures of their morbidity in a sample of over 86,000 patients in the U.K.'s National Health Service. "We therefore compared the ability of eight measures of patient morbidity and multimorbidity to predict future primary care costs [...] the measures were derived from four morbidity descriptive systems: 17 chronic diseases in the Charlson scheme, 114 Expanded Diagnosis Clusters (EDCs), and 68 Adjusted Clinical Groups (ACGs))."¹⁰

"We found that, in general, for a given disease description system, counts of diseases and sets of disease dummy variables had similar explanatory power and that measures with more categories did better than those with fewer. The EDC measures performed best, followed by the QOF and ACG measures. The Charlson measures had the worst performance but still improved markedly on models containing only age, gender, deprivation and practice effects. Allowing for individual patient morbidity greatly reduced the association of age and cost. There was a pro-deprived bias in expenditure: after allowing for morbidity, patients in areas in the highest deprivation decile had costs which were 22% higher than those in the lowest deprivation decile."¹⁰

For a given disease description system, counts of diseases and sets of disease dummy variables had similar explanatory power. The EDC measures performed best followed by the QOF and ACG measures. The "Charlson measures had the worst performance but still improved markedly on models containing only age, gender, deprivation and practice effects. Comparisons of predictive power for different morbidity measures were similar for linear and

exponential models, but the relative predictive power of the models varied with the morbidity measure. Capitation payments for an individual patient vary considerably with the different morbidity measures included in the cost model. Even for the best fitting model large differences between expected cost and capitation for some types of patient suggest incentives for patient selection. Models with any of the morbidity measures show higher cost for more deprived patients but the positive effect of deprivation on cost was smaller in better fitting models."¹⁰

A 2015 study of correlations between income and health status found striking and uniform gradation in the prevalence of chronic disease with annual family income.⁵¹

Exhibit 22. Excerpted from Woolf, 2015⁵¹

DISEASE OR ILLNESS	ANNUAL FAMILY INCOME				
	Less than \$35,000	\$35,000–49,999	\$50,000–74,999	\$75,000–99,999	\$100,000 or more
Coronary heart disease	8.1	6.5	6.3	5.3	4.9
Stroke	3.9	2.5	2.3	1.8	1.6
Emphysema	3.2	2.5	1.4	1.0	0.8
Chronic bronchitis	6.3	4.0	4.4	2.2	2.4
Diabetes	11.0	10.4	8.3	5.6	5.9
Ulcers	8.7	6.7	6.5	4.7	4.4
Kidney disease	3.0	1.9	1.3	0.9	0.9
Liver disease	2.0	1.6	1.0	0.6	0.7
Chronic arthritis	33.4	30.3	27.9	27.4	24.4
Hearing trouble	17.2	16.0	16.0	16.2	12.4
Vision trouble	12.7	9.8	7.5	5.7	6.6
No teeth	11.6	7.8	5.5	4.2	4.1

Source: J. S., Schiller, J. W. Lucas, and J. A. Peregoy. "Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2011." Vital and Health Statistics 10, no. 256 (2012): 1–207, tables 1, 4, 8, and 12. http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf.

Boston Medical Center Health Services Research published a 2013 cross-sectional study of 5,361 patients receiving care from primary care practices using capitation, salaried, or fee for service models in Ontario. This study yielded a broad set of demographic and socio-economic data correlated with health status and physician payment models. "Low income individuals were more likely to be women, unemployed, recent immigrants, and in poorer health. These individuals were overrepresented in the Salaried model, reported more visits/year across all models, and tended to report longer visits in the Salaried model. Measures of primary care services generally did not differ significantly between low and higher income/education individuals; when they did, the difference favoured better service delivery for at-risk groups. At-risk patients in the Salaried model were somewhat more likely to report health promotion activities than patients from Capitation and Fee-For-Service models. At-risk patients from Capitation models reported a smaller increase in the number of additional clinic visits/year than Fee-For-Service and Salaried models. At-risk patients reported better first contact accessibility than their non-at-risk counterparts in the Fee-For-Service model only."¹⁶

“Primary care service measures did not differ significantly across socio-economic status or primary care delivery models. In Ontario, capitation-based remuneration is age and sex adjusted only. Patients of low socio-economic status had fewer additional visits compared to those with high socio-economic status under the Capitation model. This raises the concern that Capitation may not support the provision of additional care for more vulnerable groups. Regions undertaking primary care model reforms need to consider the potential impact of the changes on the more vulnerable populations.”¹⁶

Exhibit 23. Excerpted from Dahrouge, 2013¹⁶

Table 4 Percentage distribution of selected characteristics by delivery model, sex, age, English language ability, rurality, employment, and self-reported health status

Info type ^a	Characteristics	High income & education	Low income ^b	Low education ^c	Low income & education
	Sample size (number of patients)^d	3010	444	386	215
	Community Health Centres – Salaried	509 (58%)	194 (22%)	75 (9%)	93 (11%)
	Fee-For-Service – Fee-For-Service	824 (79%)	88 (8%)	92 (9%)	43 (4%)
	Family Health Teams – New Capitation	920 (79%)	85 (7%)	108 (9%)	46 (4%)
	Health Service Organizations – Established Capitation	757 (77%)	77 (8%)	111 (11%)	33 (3%)
	Socio-demographic and social disadvantage profile				
Demog	Sex (women)*	64%	75%	54%	72%
Demog	Age (mean years)*	48	44	60	63
Demog	Rurality index (mean)*	13	12	16	16
Demog	Distance from home to practice > 10 km*	26%	20%	22%	20%
SD	Not speaking English or French at home*	0.8%	4.5%	1.6%	3.3%
SD	Aboriginal*	1.1%	3.2%	1.0%	1.9%
SD	Uninsured (in Canada)*	0.9%	4.5%	1.6%	3.7%
SD	Unemployed*	2.1%	16.9%	3.6%	15.8%
SD	Recent immigrant (< 5 years)*	1.1%	6.2%	0.5%	3.8%
	Health status				
H	Mean days with poor mental*/physical* health in past 30 days	3.9/4.6	7.8/7.9	4.0/6.8	7.0/9.4
H	Mean days limited by poor mental or physical health in past 30 days*	3.3	6.9	5.4	7.5
H	Self-perceived health very good-excellent*	88%	64%	73%	60%
H	Presence of at least one chronic disease*/Mean number of chronic diseases*	69%/1.6	77%/2.2	84%/2.6	88%/2.9
	Relationship with the practice				
	Provider is a Nurse Practitioner *	2.5%	4.1%	1.7%	3.5%
	Seeing their own provider at that visit	94%	92%	96%	93%
	Attending the practice for more than 2 years*	85%	79%	84%	83%
	Number of visits to the office in previous year (mean*, median)	5.4/4	10.0/6	7.7/5	9.0/6
	Main reason for visit – Chronic (long term) problem*	26%	42%	38%	39%

Table 5 Health service delivery across socio-economic groups and between practice models

	Salaried	Fee-for-service	New capitation	Established capitation
Duration of visit				
Overall mean (minutes)	24	15	15	15
Estimated effect – Beta (95% CI) ^a				
Low income ^b	3.1 (–0.7, 7.0)	1.1 (–1.3, 3.4)	0.5 (–1.8, 2.8)	–0.3 (–2.6, 2.0)
Low education ^c	–1.3 (–7.1, 4.5)	–0.8 (–3.1, 1.5)	0.1 (–2.0, 2.3)	–0.1 (–2.1, 1.9)
Low income and education	0.2 (–4.9, 5.3)	0.7 (–2.7, 4.2)	1.0 (–2.1, 4.1)	0.1 (–3.4, 3.6)
Number of visits per year				
Overall mean (# visits)	8.3	7.2	5.3	4.8
Estimated effect – Beta (95% CI) ^a				
Low income	7.0 (4.8, 9.2)	3.5 (1.6, 5.3)	1.4 (0.2, 2.6)	1.6 (0.5, 2.6)
Low education	3.6 (0.3, 6.9)	4.2 (2.3, 6.0)	1.1 (0.0, 2.3)	1.2 (0.3, 2.2)
Low income and education	5.4 (2.4, 8.4)	3.7 (1.0, 6.3)	0.9 (–0.7, 2.5)	1.7 (0.1, 3.3)
Estimated yearly visits for the typical patient^d				
No risk factor	7.0	7.3	5.8	4.9
Low income	14.0	10.7	7.2	6.5
Low education	10.6	11.4	7.0	6.2
Low income and education	12.4	10.9	6.7	6.6
Primary care assessment tool – Overall^e				
Mean overall score	86%	86%	86%	88%
Estimated effect – Beta (95% CI) ^a				
Low income	–0.6 (–2.2, 1.1)	0.0 (–2.0, 2.0)	–0.8 (–2.8, 1.2)	1.0 (–1.0, 2.9)
Low education	0.5 (–1.9, 2.9)	1.8 (–0.2, 3.8)	–0.5 (–2.3, 1.4)	0.6 (–1.1, 2.3)
Low income and education	1.5 (–0.6, 3.7)	3.9 (1.0, 6.7)	3.0 (0.4, 5.7)	2.1 (–0.8, 4.9)

A 2016 comparative study published in *Health Affairs* found marked differences in the social deprivation indices used in several industrialized countries, including the U.K., New Zealand, and the U.S. “Integrating public health and medicine to address social determinants of health is essential to achieving the Triple Aim of lower costs, improved care, and population health. There is intense interest in the United States in using social determinants of health to direct clinical and community health interventions, and to adjust quality measures and payments. The United Kingdom and New Zealand use data representing aspects of material and social deprivation from their censuses or from administrative data sets to construct indices designed to measure socioeconomic variation across communities, assess community needs, inform research, adjust clinical funding, allocate community resources, and determine policy impact. Indices provide these countries with comparable data and serve as a universal language and tool set to define organizing principles for population health. In this article we examine how these countries develop, validate, and operationalize their indices; explore their use in policy; and propose the development of a similar deprivation index for the United States.”³⁹

“To prepare for the broader use of data on the social determinants of health, the National Committee on Vital and Health Statistics, a statutory advisory body to the HHS secretary, is identifying approaches for improving access to local data. The Office of the Assistant Secretary for Planning and Evaluation at HHS has been charged with developing a plan for using social determinants data to adjust Medicare payments, and there are calls for using social-determinants-of-health adjustments for quality measures more broadly. A recent Centers for Medicare and Medicaid Services proposed rule asks whether a measure of ‘performance of activities for use of standardized

processes for screening for social determinants’ should be included in the Merit-Based Incentive Payment System, part of a broader Medicare reform law passed in 2015.”³⁹

“The Robert Graham Center, a policy institute affiliated with the American Academy of Family Physicians, developed the Social Deprivation Index [below], using data on neighborhood social determinants of health, to model health outcomes and health service use and to study the stability of the model across different geographies. The index was modeled on efforts in New Zealand and the United Kingdom, where deprivation indices have been used for more than two decades to allocate health care resources and identify “hot spots”—clusters of high health care utilizers in poor health—and “cold spots”—resource-poor communities with unmet need for health services.”³⁹

This model was developed using secondary analysis of data from the Dartmouth Atlas, AMA Masterfile, National Provider Identifier data, Small Area Health Insurance Estimates, American Community Survey, Area Resource File, and the Behavioral Risk Factor Surveillance System. Data were aggregated to primary care service areas (PCSAs).

Exhibit 24. Excerpted from Philips, 2016³⁹

EXHIBIT 1

US Social Deprivation Index factors and weighting

Dimension of deprivation	Description of variables	Component weight
Single parent	Single-mother household	0.861
Poor	Population below poverty	0.828
No car	Rate of no car ownership	0.760
Education	Less than 12 years' schooling	0.753
Home ownership	Renter-occupied housing	0.734
Employment	Nonemployed	0.704
Crowding	Percent overcrowded	0.609
Race	Percent black	0.511
Age	High-need age group	0.379

SOURCE Butler DC, Petterson S, Phillips RL, Bazemore AW. Measures of social deprivation that predict health care access and need within a rational area of primary care service delivery (see Note 20 in text).

This model finds low income and low education level to be among the top 5 predictors of social deprivation among Americans, with the highest weighted predictor being associated with single-mother households.

The U.S. Social Deprivation Index model provides a functional initial framework with which to model adjustments to compensate for social determinants of health in comprehensive primary care. This social deprivation index is positively associated with poor access and poor health outcomes, and as a multidimensional measure of deprivation, it is more strongly associated with health outcomes than a measure of poverty alone. This model may serve as a practical utility until CMS formally adopts and implements a uniform method for social determinant adjustments.

E. Infrastructure Payments

The purpose of the infrastructure payment or care management fee mechanism is to invest in the infrastructure and additional personnel necessary to maintain PCMH or PCMH-like standards, which are heavily oriented toward team-based care. Team based care has two overarching goals: 1) to reduce inefficiencies by delegating clinical work among a team that can work in task-oriented verticals more efficiently than generalists, and 2) to improve the comprehensiveness of care to detect and address unmet needs, reduce referrals to specialists, and ultimately mitigate the need for utilization of health services beyond the purview of primary care.

The PCMH model's ubiquity as a foundational standard lends itself readily to empirical study. A 2015 study published in the *Annals of Family Medicine* examined the costs carried by practices to maintain PCMH standards. Researchers developed a PCMH cost dimension tool to assess costs associated with activities uniquely required to maintain PCMH functions among a group of 20 varied primary care practices between Colorado and Utah. "Outcome measures included categories of staff used to perform various PCMH functions, time and personnel costs, and whether practices were delivering PCMH functions. Costs of PCMH services per clinician FTE at individual practices were aggregated to average levels by state. Average total costs per FTE clinician per month were \$7,691 in Utah and \$9,658 in Colorado. Average PCMH costs per encounter were \$32.71 and \$36.68, respectively. The estimated PMPM costs were \$3.85 for Utah and \$4.83 for Colorado, or \$4.37 for the practices overall."³⁰

In a presentation given by Bailit Health Purchasing on emerging trends in provider payment models,

the value-based compensation profiles for three different organizations were compared:

Exhibit 25. Excerpted from Bailit, 2015⁸

Variables	Organization #1	Organization #2	Organization #3
Compensation Details			
Value-oriented Performance	20%	60%	54%
Value-oriented Performance Detail			
Quality	10%	40%	0-20%
Patient Satisfaction/Access	0-9%	10%	0-20%
Efficiency	0-9%	10%	15%
Network Management	0-9%	N/A	N/A
Citizenship	N/A	N/A	5%
Seniority	N/A	N/A	5%

Note the differences in relative weighting of similar components across the three groups. In the same presentation, Bailit reports the infrastructure payment level for the Arkansas Medicaid PCMH model at \$4 PMPM. Expanding our view beyond current FFS-hybrid and PCMH programs, the care management fee (CMF) for the CMS CPC+ program is estimated at \$15 average per beneficiary per month (PBPM) for track 1 and \$28 PBPM for track 2.¹³

The supply of primary care physicians is not expected to meet near future demands under the dominant delivery models currently in use. "Numerous forecasts have predicted shortages of primary care providers, particularly in light of an expected increase in patient demand resulting from the Affordable Care Act. Yet these forecasts could be inaccurate because they generally do not allow for changes in the way primary care is delivered."⁷

In a 2015 paper published by Mathematica Policy Research, a model for the measurement of comprehensiveness of care is proposed. "Comprehensiveness of primary care (the extent to which the clinician, as part of the primary care team, recognizes and meets the majority of each patient's physical and mental health care needs) is an important element of primary care, but seems to be declining in the U.S. This is concerning, because more comprehensive primary care is associated with greater equity and efficiency in health care, improved continuity, less care fragmentation and better health outcomes. Without measurement and support for its improvement, comprehensiveness may further decline as other measured aspects of primary care (e.g. access, coordination) improve. To track, support and improve comprehensiveness, it is useful to have valid and reliable ways to measure it. This paper discusses challenges to measuring comprehensiveness for a primary care team's patient panel, presents survey and claims-based measures of comprehensiveness, and provides suggestions for future research."³⁵

While the traditional approach to PCMH or PCMH-like care management fees to support personnel and technology is a starting point for a comprehensive primary care payment model, a truly evidence-based infrastructure adjustment might be based on a measure of comprehensiveness of care as a desired outcome. Based on studies of the practice-side cost of maintaining PCMH standards, an argument could be made to establish this cost threshold as a floor of roughly \$4-5 PMPM, potentially with a measure of comprehensiveness of care as a scaling factor for higher payments. This measure will be discussed in the next section.

F. Efficiency Measures

Efficiency measurement that focuses on disease-specific process metrics often fail to reward or penalize providers for the intended activities. Population-level metrics create incentives for providers to make broad and incremental changes in the way they manage populations and health system resources. Primary care creates system-level efficiencies by addressing medical needs in a primary care setting, often as preventive or maintenance care. When treated early and with continuity and adherence in a primary care setting, many patients with manageable chronic conditions will never utilize emergency or acute services. In these cases, termed Ambulatory Care Sensitive Conditions (ACSC), emergency or acute utilization can often be interpreted as a breakdown of primary care. The Agency for Healthcare Research and Quality (AHRQ) promotes two key metrics for measuring these events: hospital admissions for ACSC and potentially preventable emergency department visits. These measures are designed to detect emergency or acute utilization events that could likely have been avoided. While these claims-based measures are purely empirical and individual cases sometimes subvert the assumptions embedded in their logic, they have been shown to be good indicators of global efficiency in the aggregate. These measures are also open source and can be implemented and executed without licensing fees. Another very common global efficiency metric for primary care is the generic fill rate for prescriptions. Many pay-for-performance programs incorporate some form of this metric to assess the proportion of prescriptions written for generic drug variants.

In a 2015 survey study of clinical practitioners' perceptions published by the Commonwealth Fund, researchers found that performance

assessments and financial penalties tied to patients' outcomes are unpopular among providers. Half of physicians and nearly 38% of nurse practitioners and physician assistants feel that the increased use of quality metrics to assess provider performance is having a negative impact on quality of care. Positive views were only slightly higher among those providers who reported receiving quality-of-care-based incentives. Similarly, fewer than one of six primary care providers (12% of physicians, 15% of nurse practitioners and physician assistants) said that programs that include financial penalties for unnecessary hospital admissions or readmissions have a positive effect on quality of care. Far more providers (52% of physicians and 41% of nurse practitioners and physician assistants) think these financial penalties are having a negative effect. It is critical to design and implement efficiency measures which support both the local practice-level priorities of primary care physicians and the global system-level priorities these physicians are working to maintain.⁴⁴

Blue Cross and Blue Shield of Louisiana uses a unique application of performance and efficiency measures to drive a value-based primary care program. The Quality Blue Primary Care (QBPC) program pays a monthly Care Management Fee (CMF) to reward enrolled physicians for undertaking care coordination activities for eligible members. The CMF is paid in addition to the fee-for-service payment system and provides a financial reward for care services that are not traditionally reimbursed. In addition to base CMFs, which are scaled to number of chronic conditions present for the patient, practices are paid based on efficiency tier adjustment factors that apply to all patients, not just those with chronic conditions. Unlike the AQC, performance among QBPC practices is not absolute, and kept competitive.⁹

Exhibit 26. Excerpted from BCBSLA, 2017⁹

Number of Targeted Chronic Conditions	Base CMF		Adjustments Based on Clinical and Efficiency Outcomes			
	Year 1	Years 2 and 3		Year 1	Year 2	Year 3
1	\$100	\$120	Lowest Tier (20%)	x1.0	x0.75	x0.5
2+	\$100	\$180	Middle Tier (50%)	x1.0	x1.0	x1.0
-		-	Highest Tier (30%)	x1.0	x1.25	x1.5

QBPC participating practices are assessed on three efficiency measures for all attributed members: Avoidable Low Back Pain Imaging, Potentially Preventable ER Visits (PPV), and Risk-adjusted Generic Drug Utilization (GFR).⁹

Clinical practices that can successfully perform the balancing act of improving efficiency and reducing waste while maintaining or expanding comprehensiveness of care can have demonstrated global impacts on quality and efficiency through a less touted metric in primary care – *continuity*. A 2015 study of provider continuity and adherence yielded striking results in a particularly at-risk population. “Prior research has demonstrated that continuity with a regular source of primary care is associated with lower use of these services and with greater patient satisfaction. We assessed the impact of a policy to increase patients' adherence to an individual primary care provider or clinic on subsequent use of ED and hospital services in a California coverage program for previously uninsured adults called the Health Care Coverage Initiative. We found that the policy was associated with a 42 percent greater probability of adhering to primary care providers. Furthermore, patients who were always adherent had a higher probability of having no ED visits [...] and no hospitalizations [...] compared to those who were never adherent.”⁴⁰

“The finding that an improved level of primary care provider adherence was associated with a reduction in the number of ED visits and hospitalizations confirms the importance of continuity of care in this low-income, previously uninsured adult population. It may be that this effect is due to better management of patients’ health care needs by the designated providers, which could be particularly important for those with ambulatory care-sensitive and complex chronic conditions. The literature on the impacts of fragmentation in primary care is sparse. Nevertheless, we hypothesize that the reductions in ED visits and hospitalizations that we observed took place because patients who use multiple sources of primary care may receive duplicate services, have inconsistent treatment plans and self-management instructions, improperly use medications, and have poorer health outcomes in general, when compared to patients who adhere to one primary care provider.”⁴⁰

The exhibit below provides an outline of some of the available approaches to measuring comprehensiveness of care, and their relative merits. The author writes, “the under-measurement of comprehensiveness results from several factors, including the lack of a common vocabulary, patient population differences, insufficient agreement across specialties, and inadequate data sources.”³⁵

Exhibit 27. Excerpted from O’Malley, 2015³⁵

Table 1 Quality Comparison of Survey- vs. Claims- vs. Chart-Based Measures of Comprehensiveness of Care

	Patient survey	Physician survey	Practice survey	Claims	EHR or chart review*
Feasibility and ease of data collection	Medium	Medium	Medium	High	Low at present but could be high in future once more clinically meaningful interoperable EHRs are in place
Ability to capture clinical appropriateness of care delivered	Low	Low	Low	Low because lack clinical data	Medium
Validity of measure of scope of services	Medium	High	High	Medium	Medium
Validity of comprehensiveness measure	High if goal is to capture meeting patient needs; low if patient expectations are that they see a different specialist for each body system	High if goal is to capture conditions clinician sees; Medium if goal is to assess the depth of management by that clinician; Low if attempting to estimate meeting of patient needs	Medium as practice respondent (as opposed to individual clinician respondent) may be less aware of individual clinicians’ relative skills and knowledge	Unclear, need to be validated	Low at present but could be higher in future once interoperable EHRs are in place

*Assumes one has access not just to primary care EHR/chart but also to charts of all clinicians the patient sees

While most quality and efficiency measures are driven by claims-based analysis, comprehensiveness of care may be better assessed through hybrid methods. While claims-based measures are the most convenient and often require the lowest administrative costs to maintain, a combination of claims and survey approaches may provide a more valid assessment. A component of the infrastructure payment in a comprehensive primary care payment model could be established to support the administrative costs for these measurement activities.

Efficiency metrics are a critical component of any measurement model which attempts to assess the impact that primary care delivery has on the overall healthcare system. This is particularly important for a comprehensive payment model which does not monitor FFS activity but assesses the global impact of a physician on the health of their patients. Common and proven global efficiency metrics include hospital admissions for ACSC, potentially avoidable emergency department visits, and generic fill rate. Current research also points to a spectrum of measures of comprehensiveness of care. While more difficult to measure consistently and empirically, comprehensiveness has been shown to be a key indicator of overall primary care effectiveness and global efficiency. Infrastructure payments could be supplemented to help offset the costs of maintaining hybrid claims- and survey-based measures.

G. Quality Measures

Pay for performance programs, while an instrumental component in most value-based payment models, can be over-engineered and create unintended incentives. These incentives are often most effective at driving performance improvements among primary care providers with low baseline quality scores. While providers with low baselines and their patients stand to benefit from improvements in performance measurement, care must be taken that these incentives motivate practice transformation, not additional administrative burden.

As practice transformation standards continue to deconstruct and reorganize workflows, it is essential for clinics to maintain or expand the level of comprehensiveness of the care delivered. Behavioral health integration, a cornerstone of comprehensive care, continues to remain fragmented under current payment and delivery models. A 2014 survey study of behavioral health integration in ACOs was conducted using the National Survey of Accountable Care Organizations (NSACO), a comprehensive survey of ACOs that were in existence as of August 2013. These ACOs included participants in Medicare's Shared Savings Program, Pioneer ACOs, Medicaid ACOs, and commercial-payer ACOs. The researchers identified commercial-payer ACOs through multiple sources, including participation in ACO learning collaboratives (such as those run by Premier, the American Medical Group Association, and the Brookings-Dartmouth Learning Network), responses to surveys identifying ACOs (such as the National Survey of Physician Organizations), and public notices of ACO contracts (for example, press releases). "Our findings paint a mixed picture of behavioral health care in ACOs. There is strong evidence that inadequately treated behavioral health conditions contribute to poor physical health outcomes and high costs. However, our survey showed that most ACOs have done little to move beyond the traditional model of fragmented primary and behavioral health care."²⁸

"Results from our interviews suggest that providers respond to factors in their current environments, such as the extent of behavioral health needs in their patient populations, and to payment reform incentives, such as quality metrics upon which providers are evaluated. ACOs that were expanding the scope of behavioral health care offered in the primary care setting were using three models of primary care capacity building. A smaller subset of ACOs was employing reverse integration models to embed primary care in behavioral health settings, particularly for patients with more severe mental health or substance abuse conditions." The study speculates that "an ACO's motivation for working to improve or integrate behavioral health care highlights the crucial role that contract structures and policy may play in encouraging better care. The set of quality measures in an ACO contract has a large impact on where providers focus their efforts."²⁸

Primary care is beholden to a fundamental dynamic – the payment model and delivery model are too intrinsically connected to change independently. Movement to value-based payment and ultimately global or comprehensive payment for primary care must coincide with foundational changes in delivery. A randomized controlled study of payment and delivery model interdependence in Canada reinforces this. In 2011, Boston Medical Center Family Practice published an outcomes study on the Improved Delivery of Cardiovascular Care (IDOCC) through Outreach Facilitation. Using baseline data collected through IDOCC, researchers conducted a cross-sectional study of 82 primary care practices from three delivery models in Eastern Ontario. This sample included 43 fee-for-service, 27 blended-capitation and 12 community health centers with salary-based physicians. Medical chart audits from 4,808 patients with or at high risk of developing cardiovascular disease were used to examine each practice's adherence to ten evidence-based processes of care for diabetes, chronic kidney disease, dyslipidemia, hypertension, weight management, and smoking cessation care.²⁹

"The percentage of patients with diabetes that received two hemoglobin A1c tests during the study year was significantly higher in community health centres (69%) than in fee-for-service (45%) practices (Adjusted Odds Ratio (AOR) = 2.4 [95% CI 1.4-4.2], p = 0.001). Blended capitation practices had a significantly higher percentage of patients who had their waistlines monitored than in fee-for-service practices (19% vs. 5%, AOR = 3.7 [1.8-7.8], p = 0.0006), and who were recommended a smoking cessation drug when compared to community health centres (33% vs. 16%, AOR = 2.4 [1.3-4.6], p = 0.007). Overall, quality of diabetes care was higher in community health centres, while smoking cessation care and weight management was higher in the blended-capitation models. Fee-for-service practices had the greatest gaps in care, most noticeably in diabetes care and weight management. This study adds to the evidence suggesting that primary care delivery model impacts quality of care."²⁹

The Blue Cross Blue Shield of Massachusetts Alternative Quality Contract (AQC) is a leading example of the implementation of high-value, uniform performance measurement to drive value-based outcomes. While the proportion of value-based payment to overall reimbursement is modest, the structure of the program is unique and effective. "Groups can earn bonuses of up to 5 percent based on their performance on thirty-two care measures for ambulatory or office-based services and up to another 5 percent for their performance on thirty-two measures of hospital care. The incentive payments are not incorporated into the budgets but must be earned each year."¹⁵

This quality bonus system is based on absolute rather than relative performance, which is a key to its uniqueness and success in the competitive Massachusetts market. “For each measure, there is a range of performance targets (“gates”)...the highest target (gate 5) is set at an empirically derived score that available evidence suggests can be achieved by an optimally performing physician group or hospital. Gate 1 is set at about the network median for each measure. For each measure a “gate score” is computed linearly based on where the group scores relative to the gate 1 and gate 5 thresholds. For example, if a group’s performance is halfway between gates 1 and 5, the group gets a 3 for that measure. If it is 75 percent of the way from gate 1 to gate 5, the score for that measure is a 4. The gate scores for each measure are then summed. Outcome measures, such as controlling blood pressure, are given triple weight compared to process measures, such as breast cancer screening, and also compared to patient experience measures, such as the quality of communication. The annual quality payment is based on the aggregated score. The relationship between the bonus and aggregate score is S-shaped. Thus, a one- unit increase in aggregate score generates a bigger increase in the bonus for groups around the middle of the performance range relative to at the top or bottom. The use of absolute performance scores (as opposed to scores relative to other groups) encourages groups to continuously improve and to share best practices with one another. Ambulatory quality measures almost exclusively reflect the performance of the group’s primary care practices, creating strong incentives for groups to invest in primary care. The primary care incentives of the Alternative Quality Contract are notably different from traditional fee-for-service incentives, which motivate providers to use highly specialized services and which often leave primary care practices as just the gateway to specialty care revenue.”¹⁵

Blue Cross and Blue Shield of Louisiana also uses a unique application of performance and efficiency measures to drive their value-based primary care program. The Quality Blue Primary Care (QBPC) program pays a monthly Care Management Fee (CMF) to reward enrolled physicians for undertaking care coordination activities for eligible members. The CMF is paid in addition to the fee-for-service payment system and provides a financial reward for care services that are not traditionally reimbursed. In addition to base CMFs, which are scaled to number of chronic conditions present for the patient, practices are paid based on efficiency tier adjustment factors that apply to all patients, not just those with chronic conditions. Unlike the AQC, performance among QBPC practices is not absolute, and kept competitive.⁹

According to Dr. Ed Jeffries, the QBPC program’s Medical Director, the program has been well received by the Louisiana provider community overall. They currently serve more than 200,000 attributed members in commercial and Medicaid products among more than 700 participating primary care physicians. The program is currently in its fourth performance year, and quality measures continue to improve. “The program itself is very portable,” states Dr. Jeffries, “it has good potential for broader implementation in other markets.” A 2016 independent evaluation of the QBPC program by Tulane’s University’s School of Public Health and Tropical Medicine found extensive evidence of the program’s effectiveness in improving quality and efficiency metrics. The study detected favorable changes in all measures of inpatient utilization for patients with chronic conditions, and improved quality of care in three key metrics for patients with diabetes.⁴⁵

The AAFP’s 2016 position paper on primary care reforms strongly endorses a set of performance measures selected from the Core Quality Measures Collaborative’s PCMH-ACO-Primary Care Core Set. This collaborative includes stakeholders such as CMS, the National Quality Forum (NQF), America’s Health Insurance Plans (AHIP), health plans, as well as physician, consumer, and employer groups. This collaborative aims to reduce the burden of performance measure initiative by establishing a core set of high-value, uniform metrics and eliminating low-value or redundant ones. The PCMH-ACO-Primary Care Core Set includes clinical quality, patient safety, patient experience, and resource use measures using the National Quality Strategy as a guide. The core set includes various types of measures including: process, intermediate process, outcomes, patient-reported outcome measures, and CG-CAHPS evaluation of patient satisfaction.⁵

This set of primary care quality measures was developed by the collaborative through consensus as a minimum standard set of metrics for PCMH and ACO applications. These metrics include:

- Controlling high blood pressure, HEDIS 2016 variant or JNC-8 variant
- Persistent Beta Blocker Treatment After a Heart Attack
- Ischemic Vascular Disease: Use of Aspirin or Another Antithrombotic
- Comprehensive Diabetes Care: HbA1c Poor Control
- Comprehensive Diabetes Care: Eye Exam
- Comprehensive Diabetes Care: Hemoglobin A1c Testing
- Comprehensive Diabetes Care: Foot Exam
- Comprehensive Diabetes Care: Medical Attention for Neuropathy
- Medication Reconciliation

- Cervical Cancer Screening
- Non-recommended Cervical Cancer Screening in Adolescent Females
- Breast Cancer Screening
- Colorectal Cancer Screening
- Preventive Care Screening: Tobacco Use: Screening and Cessation
- Preventive Care Screening: Body Mass Index (BMI) Screening and Follow-Up
- Use of Imaging Studies for Low Back Pain
- Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS)
- Depression Readmission at 12 Months
- Depression Response at 12 Months – Progress Toward Remission
- Medication Management for People with Asthma
- Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis

As practice patterns change, it is critical for clinical practices to maintain or continue to improve the quality of care delivered. Commercial payers have implemented a wide variety of performance measurement programs that leverage creative solutions to competition, adverse selection, and measurement fatigue. The payment and delivery models for primary care are too intrinsically linked to evolve independently – this dynamic is critical to the development of an approach to performance measurement that supports the goals of a comprehensive payment for primary care. The AAFP endorses a rich set of PCMH-ACO-Primary Care Core measures. This measure set offers a strong baseline performance measurement program for a comprehensive primary care payment model.

H. Patient Attribution

The supply and demand disparity for primary care physicians poses a major problem for many approaches to patient attribution. “Most existing estimates of the shortage of primary care physicians are based on simple ratios, such as one physician for every 2,500 patients. These estimates do not consider the impact of such ratios on patients’ ability to get timely access to care. They also do not quantify the impact of changing patient demographics on the demand side and alternative methods of delivering care on the supply side.”²⁰

Commonly used patient attribution methodologies are largely empirical and iterative. Obvious matches are made on an initial pass with simple and intuitive rules for setting the match. Subsequent passes make increasingly complex assumptions about physician and patient behavior and as a result, the logic used is increasingly tenuous, and the matches are less reliable. Most commonly used methods rely on business rules to establish a point of diminishing returns at which to terminate the algorithm, without further examining the quality of the matches, or the plausibility of the panel sizes the algorithm has imputed. Improper attribution can lead to highly confounded analyses of physician performance, and easily undermine the value-oriented practice model and the value-based payment model in question. Attribution models are a fundamental component of and lens through which value-based payment models are executed and evaluated.

A 2013 study published in Health Affairs attempted to model realistic guidelines for panel sizes based on a variety of practice productivity models.

Exhibit 28. Excerpted from Green, 2013²⁰

EXHIBIT 3			
“Moderate Access” Patient Panel Sizes Under Varying Degrees Of Physician Pooling And Patient Demand Diversion In Primary Care Practices			
Patient diversion fraction/ physician pooling	Patient panel size, by number of appointment slots per day		
	20	24	28
ZERO			
Solo	2,149	2,624	3,228
Pool 2	2,268	2,748	3,275
Pool 3	2,313	2,794	3,762
10 PERCENT			
Solo	2,413	2,942	3,472
Pool 2	2,534	3,068	3,603
Pool 3	2,580	3,115	3,650
20 PERCENT			
Solo	2,743	3,339	3,937
Pool 2	2,868	3,469	4,070
Pool 3	2,914	3,516	4,119
30 PERCENT			
Solo	3,169	3,852	4,536
Pool 2	3,297	3,984	4,672
Pool 3	3,344	4,033	4,722
40 PERCENT			
Solo	3,738	4,536	5,336
Pool 2	3,870	4,672	5,475
Pool 3	3,918	4,722	5,527

SOURCE Authors’ analysis. **NOTE** Patient diversion fraction and physician pooling are explained in the text.

In this study, the researchers used simulation methods to provide estimates of the number of primary care physicians needed, based on a comprehensive analysis considering access, demographics, and changing practice patterns. “We show that the implementation of some increasingly popular operational changes in the ways clinicians deliver care—including the use of teams or “pods,” better information technology and sharing of data, and the use of non-physicians—have the potential to offset completely the increase in demand for physician services while improving access to care, thereby averting a primary care physician shortage.”²⁰

This study’s results can also be interpreted as a set of quantitative guidelines for attribution algorithm “stopping rules.” By estimating maximum possible panel sizes under a variety of practice pooling and appointment models of productivity, the authors have generated a matrix of theoretical limits to panel compositions. These “stopping rules” can be used to limit the iterations an empirical attribution algorithm makes to confine it to realistic targets.

The AAFP recommends a patient-based, prospective, four-step process that includes a 24-month look-back period for attribution. A prospective methodology allows physicians to know whom they are responsible for in advance and facilitates proactive care planning and management. This methodology is consistent with the core approach used in much of the industry.⁵

Step 1: Patient Selection of Primary Care Physician and Team

This is the acknowledgement that patient selection is the best choice in attribution and should be prioritized as such.

Step 2: Primary Care Visit Events: Wellness Visits

If a patient is not attributed by self-selection of a primary care physician, payers should use well visits, including Welcome to Medicare, physicals, and Annual Wellness Visits provided by the patient's primary care physician or the practice team, as the next step in the attribution process.

Step 3: Primary Care Visit Events: All Other E/M Visits

If a patient is not attributed by a wellness visit, the next incremental step is to include all other evaluation and management (E/M) visits to a primary care physician. The payer should attribute the patient to the primary care physician who provides the plurality of E/M visits.

Step 4: Primary Care Prescription and Order Events

If the patient is not attributed by a wellness visits or any other E/M services, payers should consider claims related to medication prescriptions, durable medical equipment prescriptions, and lab and other referral orders made by primary care physicians. Payers should require a minimum of three such events before attributing a patient on this basis.

No patient attribution methodology is perfect. The four-step methodology recommended above may still produce errors in assignment. Physicians should have the option to engage in a reconciliation process in which they can review, add, and remove patients from the formal list

the payer supplies to them. Like the attribution process, review and reconciliation should occur quarterly and include enough time to adequately review the list.⁵

Exhibit 29. Excerpted from AAFP, 2016⁵

Step in Process	Event Type	Eligible Procedure or Event	Look-back Period	Assignment Criteria	Minimum Threshold for Assignment	In Event of a Tie
Step 1	Patient Selection of Primary Care Physician	N/A	N/A	N/A	N/A	N/A
Step 2	Primary Care Visits: Wellness Visits	Well Visit E/M and Select G Codes Only	24 months	Plurality	1 visit	Most recent visit
Step 3	Primary Care Visits: All Other E/M Visits	Any E/M Codes	24 months	Plurality	1 visit	Most recent visit
Step 4	Primary Care Prescriptions and Order Events	Any Rx code; claims related to medication prescriptions, durable medical equipment, and lab and referral orders	24 months	Plurality	3 events	Most recent event

Patient attribution should be approached as an empirical exercise and attempt to model physician-patient behavior. Many algorithms do not supply a "stopping rule" beyond which the validity of results approach diminishing returns and risk improper attribution. Improper attribution can have a profound effect on the metrics used to evaluate and reimburse physicians, particularly in value-based models. The standard approach recommended by the AAFP is consistent with those used in much of the industry. This approach is well suited to comprehensive primary care payment when combined with theoretical stopping rule limits and a robust review and reconciliation process.

IV. DISCUSSION

A. Summary Findings and Recommendations

Primary care in the U.S. is transitioning from an illness model to a health model. Delivery and payment are too intrinsically linked to change independently, and movements to value-based care must be mirrored by value-based payment. Historical attempts at comprehensive payment, such as capitation, typically faced difficulties with risk adjustment and rate setting, and may have created incentives to withhold care when not properly balanced. It will be critical to acknowledge these pitfalls and address them in developing a contemporary payment model.

Patient-centered medical home programs enjoy broad adoption, a robust evidence base, and a position as a foundational model for future primary care reforms. The proliferation of this model has allowed for extensive experimentation with payment models that support a spectrum of arrangements. A very common form of model is the value based FFS-hybrid, where a practice adheres to PCMH standards while their payment model contains a mix of FFS and value-based reimbursement, such as quality- or efficiency-laden bonuses, care management fees (CMFs) or other infrastructure payments. Robust and well-performing examples of these types of models include Quality Blue Primary Care at Blue Cross Blue Shield of Louisiana, the Alternative Quality Contract at Blue Cross Blue Shield of Massachusetts, and the Physician Group Incentive Program at Blue Cross Blue Shield of Michigan. State Innovation Model grants have provided incentives for more aggressive global budget projects in Ohio and Oregon. HMSA in Hawaii has piloted a cutting-edge comprehensive primary care payment model which was piloted in early 2016 and as of April 2017 covers nearly half of their membership. Lastly, the emerging direct primary care model offers evidence of the efficacy of purely value-based and non-transactional care.

Proposed Model for Comprehensive Payment for Primary Care

To allow for transformation into a twenty-first century primary care delivery system which supports the triple aim, we recommend that a comprehensive primary care payment model contain 7 key components:

- Prospective PMPM payment
- Population risk adjustment
- Social determinants of health adjustment
- Infrastructure adjustment
- Efficiency adjustment
- Quality adjustment
- Patient attribution logic

In the following sections, we summarize the findings that contribute to these components and develop methodological recommendations for each.

Primary Care Payment Rates

National health expenditures are projected to grow at an average rate of 5.6% annually through 2025, with physician and clinical services currently growing at 6.3% as of 2015 – at rate which is accelerating. The growth acceleration in physician and clinical services is driven by non-price factors, where price growth itself has declined 1.1% in 2015. This points to increasing and accelerating demand for physician and clinical services in the coming decade. Patient out-of-pocket obligation grew between 2.7% and 3.5% between 2013 and 2014, and continued growth is primarily driven by growth in deductibles. In order to combat medical trend and remain solvent, payers are relying increasingly on high deductible insurance products. Deductible levels increased between 7.9% and 9.5% during the same period.

There is a growing evidence base to support increased investment in primary care spending to lower total cost of care and improve quality and efficiency system-wide. Moreover, models focusing on value-based and non-FFS payment for primary care are yielding results that demonstrate reductions in cost of care as a function of investments in primary care, with top end estimates that link 20-100% increases in primary care spending with 18-33% reductions in total health care spending. The RI OHIC reported that high performing health systems spend on average 9% of total health care expenses on primary care in the current FFS model. A modest increase to into the range of 10-12% of total health care costs allows for necessary infrastructure investment and expanded comprehensiveness of care.

- *Recommend setting CPCP payment rate to account for approximately 10-12% of total health care costs.*

Population Risk Adjustment

Population health risk adjustment models play a critical role in avoiding adverse selection to balance panels and allocate primary care resources. While a number of popular commercially available models dominate the space, open source and hybrid models offer more utility for research and demonstration projects. The MCAM model, which is endorsed by the AAFP, provides a framework for multi-level assessment that accounts for both evidence-based risk and heuristics for barriers to care. The PCAL model offers a strong quantitative framework for estimating primary care-specific burden based on limited demographic and diagnostic information. PCAL also offers a degree of population

specific refinement and tuning without purchasing commercial software.

- *Recommend developing a hybrid model using the PCAL framework with an MCAM component. CDPS can be used as a validation proxy for development and testing.*

Social Determinants of Health

Social determinants of health are key factors in achieving health outcomes. A variety of state- and regional-level efforts are underway to collect and standardized total cost of care (TCOC) data for broad measurement and benchmarking. These programs are still largely disparate, as interoperability and competition present natural market barriers to data sharing. However, the existing programs offer insights that may be portable to other markets under conservative assumptions. AHRQ's MEPS program provides possibly the most comprehensive publically available data on the cost of medical care in the U.S., and these statistics are combined with a wide variety of demographic and socio-economic data. While raw data tables are not made available for public release, MEPS provides pre-aggregated benchmarks and indices that can be used by researchers.

- *Recommend leveraging MEPS data sources for setting indices for social determinants of health for use in a CPCP model.*

The U.S. Social Deprivation Index model provides a functional initial framework with which to model adjustments to compensate for social determinants of health in comprehensive primary care, with specific attention to income and education level. This social deprivation index is positively associated with poor access and poor health outcomes, and as a multidimensional measure of deprivation, it is more strongly associated with health outcomes than a measure of poverty alone. This model may serve as a practical utility until CMS formally adopts and implements a uniform method for social determinant adjustments.

- *Recommend using the U.S. Social Deprivation Index to create adjustments that take MEPS data as inputs.*

Infrastructure Adjustment

While the traditional approach to PCMH or PCMH-like care management fees to support personnel and technology is a starting point for a comprehensive primary care payment model, a truly evidence-based infrastructure adjustment might be based on a measure of comprehensiveness of care as a desired outcome. Based on studies of the practice-side cost of maintaining PCMH standards, an argument could be

made to establish this cost threshold as a floor, with the CPC+ thresholds as a ceiling, and a measure of comprehensiveness of care scaling the interval.

- *Enhanced care management, care coordination and population health management are all universally desired from primary care, but not adequately funded through traditional FFS reimbursement. An infrastructure adjustment must be included to support the team based approach to care. Scaling factors may be tied to a measure of comprehensiveness of care.*

Efficiency Adjustment

Efficiency metrics are a critical component of any measurement model which attempts to assess the impact that primary care delivery has on the overall healthcare system. This is particularly important for a comprehensive payment model which does not reimburse based on FFS activity but assesses the global impact of a physician on the health of their patients. Current research also points to the value of measures of comprehensiveness and continuity of care. While more difficult to measure consistently and empirically, comprehensiveness and continuity have been shown to be key indicators of overall primary care effectiveness and global efficiency. Infrastructure payments could be supplemented to help offset the costs of maintaining hybrid claims- and survey-based measures of comprehensiveness and continuity.

- *Recommend using common and proven global efficiency metrics including hospital admissions for ACSC, potentially avoidable emergency department visits, and generic fill rate, as well as measures of comprehensiveness and continuity of care.*

Quality Adjustment

As practice patterns change, it is critical for clinical practices to at least maintain or continue to improve the quality of care offered, as well as improve the continuity of care received by the patients. The AAFP endorses a rich set of PCMH-ACO-Primary Care Core measures, which can be adapted in models which also measure comprehensiveness and continuity as more global effects. Commercial payers have implemented a wide variety of performance measurement programs that leverage creative solutions to competition, adverse selection, and measurement fatigue.

- *Recommend conforming to the AAFP's recommended PCMH-ACO-Primary Care Core Measure Set, with additional focus on measures of comprehensiveness and continuity of care.*

Patient Attribution

Patient attribution should be approached as an empirical exercise and attempt to model physician-patient behavior. Many algorithms do not supply a “stopping rule” beyond which the validity of results approach diminishing returns and risk improper attribution. By estimating maximum possible panel sizes under a variety of practice pooling and appointment models of productivity, a matrix of theoretical limits to panel compositions can be specified. These “stopping rules” can be used to limit the iterations an empirical attribution algorithm makes to confine it to realistic targets. Improper attribution can have a profound effect on the metrics used to evaluate and reimburse physicians, particularly in value-based models. The standard approach recommended by the AAFP is consistent with those used in much of the industry. This approach is well suited to comprehensive primary care payment when combined with theoretical stopping rule limits and a robust review and reconciliation process.

- *Recommend deploying an industry standard 4-step attribution methodology supplemented by a matrix of stopping rules derived from physician productivity research to set boundary levels.*

B. Conclusion

PCMH programs and ACOs have helped to create a culture of measurement, accountability and innovation in primary care. The proliferation of these models has allowed the foundational standards they foster to mature. The U.S. primary care system is moving rapidly toward more innovative and progressive forms of primary care payment that support a health model of care, as opposed to an illness or transactional model of care.

This study attempts to survey the current state of value-based primary care payment models in use in the U.S. and draw key information about the efficacy, challenges, and successes of these programs. The resulting recommendations provide a framework and justification for critical components of a comprehensive primary care payment model.

V. APPENDIX

A. Conceptual Schema

In pursuit of our research objectives, we established a conceptual schema using three organizing principles: evidence type, healthcare dimension, and key concept. The evidence type classification schema used a series of five dichotomous modes:

- Empirical-theoretical
- Quantitative-qualitative
- Observational-experimental
- Correlative-causal
- Anecdotal-scientific

In order to organize our findings into healthcare-specific categories, we used a series of general and key concept tags that function as non-hierarchical attributes. General healthcare dimensions include:

- Access
- Quality
- Efficiency
- Cost
- Outcomes
- Sustainability

Lastly, our inquiry-specific key concepts include:

- Total cost of care
- Risk models
- Social determinants of health
- Value-based payment
- Performance measurement
- Comprehensive payment
- Domestic/foreign models

All evidence pieces collected for this study were reviewed and abstracted according to this conceptual schema.

B. Literature Review Sources

A broad literature review functioned as our primary source of evidence. To support this project, we cited 51 of 89 reviewed academic papers, white papers, articles and conference proceedings published between 2008-2017 from the following sources:

- Agency for Healthcare Research and Quality
- American Academy of Family Physicians
- Annals of Family Medicine
- Annals of Internal Medicine
- Bailit Health Purchasing

- Blue Cross and Blue Shield of Louisiana
- Blue Cross and Blue Shield of Massachusetts
- Boston Medical Center Health Services Research
- California Improvement Network
- Health Affairs
- Health Care Payment Learning and Action Network
- Healthcare Financing Review
- International Journal of Environmental Research and Public Health
- Journal of General Internal Medicine
- Journal of Health Economics
- Journal of the American Medical Association
- Kaiser Family Foundation
- Mathematica Policy Research
- Milbank Quarterly
- Modern Healthcare
- New England Journal of Medicine
- Ohio Governor's Office of Health Transformation
- Rhode Island Office of the Health Insurance Commissioner
- Robert Wood Johnson Foundation
- The Centers for Medicare and Medicaid Services
- The Commonwealth Fund
- The Starfield Summit
- Tulane University School of Public Health
- UnitedHealth Center for Health Reform and Modernization

C. Key Informant Sources

As a secondary source, we conducted interviews with a variety of industry leaders. These conversations focused on perspectives on the current state of primary care payments models, successes and challenges that the subject observes in their segment of the industry, and some conjecture on future trends. These interviews were conducted between late January and late February of 2017 and consisted of a one-hour, unrecorded telephone discussion. Our key informants included:

- Dr. Erika Bliss, MD, CEO, Qliance
- Dr. Matthew Collins, MD, MBA, VP of Clinical Integration, Blue Cross Blue Shield of Rhode Island
- Dr. John Freedman, MD, MBA, Principal, Freedman HealthCare
- Erik Helms, MS, SVP Strategic Initiatives, Buckeye Health Plan
- Dr. Ed Jeffries, MD, Medical Director, Quality Blue Primary Care, Blue Cross Blue Shield of Louisiana
- Dr. Scott Latimer, MD, Chief Medical Officer, Senior Whole Health
- Dr. Ed McGookin, MD, FAAP, Chief Medical Officer, Coastal Medical



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