



PROVIDER SURVIVAL STRATEGIES IN AN AT-RISK ENVIRONMENT

ALVAREZ & MARSAL

For all inquiries, please contact:
David Gruber, MD, MBA
Managing Director and Director of Research
+1 212 763 9801
dgruber@alvarezandmarsal.com

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Consider the impact on American services if other industries routinely operated in the same manner as many aspects of health care:

If banking were like health care, automated teller machine (ATM) transactions would take not seconds but perhaps days or longer as a result of unavailable or misplaced records.

If home building were like health care, carpenters, electricians, and plumbers each would work with different blueprints, with very little coordination.

If shopping were like health care, product prices would not be posted, and the price charged would vary widely within the same store, depending on the source of payment.

If automobile manufacturing were like health care, warranties for cars that require manufacturers to pay for defects would not exist. As a result, few factories would seek to monitor and improve production line performance and product quality.

If airline travel were like health care, each pilot would be free to design his or her own preflight safety check, or not to perform one at all.

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HEALTH CARE: PROVIDER SURVIVAL STRATEGIES IN AN AT-RISK ENVIRONMENT

Foreword

In this report, Alvarez & Marsal (A&M) provides its perspective on the transformative actions required by providers to succeed in an at-risk, value-based environment. Notwithstanding the election of President Trump, the appointment (and subsequent resignation) of Tom Price, M.D., as secretary of the Department of Health and Human Services, and the recent Centers for Medicare and Medicaid Services (CMS) proposal to eliminate cardiac care and fracture management episode payment (bundle) models and to reduce the number of mandated comprehensive joint replacement (CJR) markets from 67 to 34, A&M believes that payment reform is inevitable. The rate of change remains difficult to forecast, and will vary by market.

According to CMS, national healthcare expenditures will increase from \$3.5 trillion in 2017 to \$5.5 trillion in 2025 — two trillion dollars in only eight short years — and account for 19.9 percent of the gross domestic product (GDP).¹ Employer-sponsored health insurance expenditures of \$1,209 billion, Medicare of \$719 billion and Medicaid of \$587 billion are being increasingly pressured by an inability to further shift costs to employees, a rapidly aging population and low income coverage expansion.

Consolidation by hospitals, health systems, insurers and manufacturers have resulted in higher prices. Specialty and branded drug costs have exploded. Rising out-of-pocket costs have made healthcare unaffordable for low-to-moderate-income Americans, i.e., the two-thirds of the population with household income <\$80,000 per annum.^{2,3} Despite the high level of spending, U.S. mortality rates for a wide variety of conditions are the highest among Organization for Economic Cooperation and Development (OECD) markets.⁴

Traditional restructuring and performance improvement activities are required, but they are not sufficient to succeed in the future. Care delivery transformation, population health, enhanced risk management, actionable insights (“big data”), physician alignment and patient engagement are also required, with a focus on improved efficiency, effectiveness and experience of care. Consolidation has created a hospital-centric healthcare delivery system that needs to increasingly focus on prevention, earlier intervention and lower-cost site of service across the entire continuum.

Value is a function of cost and quality. The age-adjusted healthcare spending differential of 50–75 percent between the U.S. and other advanced economies highlights the opportunity for productivity improvement.^{5,6} As Wayne Gretzky, the leading scorer in National Hockey League history, states: “Skate to where the puck is going, not where it has been.”

That is the essence of our latest publication.

Martin McGahan
Managing Director
Head of A&M Healthcare Industry Group



EXECUTIVE SUMMARY

In this report, A&M is focused on providing context for the actions deemed necessary by providers to succeed in an increasingly at-risk, value-based environment. All healthcare is local. Siloed activities now require convergent integration. Each provider needs to consider federal (Medicare) and state (Medicaid) reimbursement and regulatory initiatives, local market conditions such as demographics, socioeconomic factors, competitive intensity, market share and relative performance, and its own capabilities and risk profile.

A&M has identified six critical strategic imperatives for providers:

- Patient care (delivery) transformation
- Population health management
- Payment reform risk management
- Actionable insights (“big data”)
- Sustainable physician behavior change (alignment)
- Sustainable patient (caregiver) behavior change (engagement)

Our description of these issues draw distinctions as we separate the hype from the reality of execution. Executive leadership, effective execution, change management and fact-based decision-making will be critical to organizational transformation.

PATIENT CARE (DELIVERY) TRANSFORMATION

The U.S. healthcare delivery system is inefficient (expensive), ineffective (high mortality rate) and often results in an inadequate care experience. Contributors to the dysfunction include several well-known factors such as fee-for-service reimbursement, a focus on acute intervention, care fragmentation, facility-centricity and limited patient (caregiver) engagement.

Patient care (delivery) transformation requires an increased focus on the patient, their comorbidities and social determinants; disease management alone does not sufficiently recognize the need for whole person care. Hospital-centric health systems will be challenged by its cost structure, relatively high outpatient prices, the shift to home-based care and the need to recognize the

importance of (cognitive) primary care physicians who are not procedure-oriented. Risk stratification, prevention, discharge planning, transition management and case management require an interoperable technology infrastructure with advanced analytic capabilities. Particularly challenging will be care coordination and management by fragmented providers across the entire continuum. A provider-driven reduction in process variation is critical to improving quality while reducing costs.

POPULATION HEALTH MANAGEMENT

The original Kindig and Stoddart definition of population health, published in 2003, focused on the health outcomes of a group of individuals, as well as the distribution of outcomes within the group. A&M and others believe that a focus on the entire population, which includes the 50 percent of Americans accounting for 3 percent of costs, results in a diffusion of effort. Our definition of population health is focused on the 5–10 percent of the population accounting for 43–68 percent of costs.

Managing population health requires consideration of clinical, behavioral and social determinants of health; depression and activity limitations independently increase the costs of care. Population health management is a highly data-dependent endeavor focused on patient stratification into clinically meaningful subgroups and longitudinal, multiyear costs, outcomes and gaps in care. Fully 43 percent of high-cost patients in the 90th percentile of spending will be in the same percentile of spending the following year. Population health management requires translation to the individual patient through case management and patient (caregiver) engagement. Population-based metrics (e.g., admissions per 1,000 population) are diametrically opposite to those in a fee-for-service system (e.g., average daily census). Barriers to implementation include an inadequate data and analytics infrastructure, lack of performance transparency and an unwillingness to factor site of service cost differentials into the analysis.

PAYMENT REFORM RISK MANAGEMENT

The transition from fee-for-service (volume) to value (quality as a function of cost) fundamentally alters the risk profile of a provider. *A&M has generated the concept of a **provider***

***hybrid**, defined as a provider with risk management understanding similar to payers, but without the depth of investment, capabilities and regulatory approvals necessary to actually create a joint venture or sponsor a health plan.*

Areas of payer risk management (approaches) of interest include product design and pricing, actuarial and underwriting, expense management (managing demand, limiting volume of services and steering volume of services), managing care to best outcomes, contracting, network creation and capital requirements.

Risk management requires local market context, consideration of institutional risk tolerance profile and an assessment of capabilities (internal, outsourced). A systematic approach includes risk identification, assessment, prioritization and control, i.e., avoidance, mitigation, retention and/or transfer.

Augmented analytic capabilities are essential and may represent a competitive advantage as providers will have access to not only retrospective claims data but also real-time electronic medical record (EMR) data facilitating real-time intervention. Most providers offer self-insured health plans to their employees, facilitating the assessment and “testing” of risk management initiatives at a relatively low cost.

ACTIONABLE INSIGHTS (“BIG DATA”)

The Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 allocated \$18 billion as incentives for hospitals and physician practices to become meaningful users of electronic medical records and allocated an additional \$2 billion to promote health information exchange and use of personal health information by consumers (patients). Despite an increase in the percentage of hospitals with advanced (HIMSS Stages 5–7) health IT capabilities, from 6.1 percent to 70.2 percent, and ambulatory (non-hospital) physician practice adoption of 35.8 percent, the results have been disappointing. Physician productivity has declined, and health information exchange remains challenging. Financial incentives were not available to post-acute care providers (e.g., skilled nursing facilities, home care), integral components of the care continuum.

EMRs have not only contributed to an increase in reimbursement, but also a decrease in physician productivity. Studies have suggested that EMRs have created more screen time and less patient contact for physicians. Health information exchange within and between healthcare systems has been limited by interoperability challenges among vendors.

The “big data” revolution has resulted in the identification and aggregation of data from disparate sources, i.e., improved data management and reporting. However, data extraction remains a challenge. The reporting of data (“dashboards”) is far different than the generation of insights that enable improved decision-making, i.e., actions that lead to measurable progress.

The Institute of Health Improvement (IHI) framework for operational excellence, known as the Triple Aim, is focused on improving the health of a population, the experience of care and on reducing the per capita cost of care. Data analysis and the use of advanced analytics are essential to their attainment. Transformative, insights-driven approaches to care delivery, risk management, physician alignment and patient engagement are required.

Providers with access to timely electronic medical record data potentially have a competitive advantage over payers. Claims data is retrospective, with a lag of at least three to six weeks, and is process rather than outcome oriented. EMR data is real-time and quantitative, and allows clinicians to better manage patients on a timely basis. In an at-risk, value-based environment, process-of-care enhancements, combined with a reduction in provider variation, can result in substantial improvements in efficiency and effectiveness.

SUSTAINABLE PHYSICIAN BEHAVIOR CHANGE (ALIGNMENT)

During the past decade, there has been an acceleration in the “corporatization” of healthcare, with hospitals merging into ever-larger health systems, health systems acquiring physician practices, and insurance companies privatizing (e.g., Anthem) and acquiring each other. As a result, many (primarily older) physicians feel disengaged, have suffered a partial loss of autonomy, are less productive and generate less income. Significant gaps in perception regarding involvement, role and trust have emerged between administrators and physicians. A physician generational divide has emerged.

Primary care physicians are among the lowest-paid

practitioners in a fee-for-service reimbursement system driven by procedures. Patient engagement, prevention and care coordination efforts have not been adequately, if at all, rewarded. Health systems in a risk-based, value-oriented care delivery system will need to reconsider their compensation system based on throughput. A reduction in ambulatory care-sensitive condition hospital admissions and readmissions, as well as a more conservative approach to ancillary services, and surgical and non-surgical procedures will drive future profitability.

The implementation of the Medicare Access and CHIP Reauthorization Act (MACRA) by CMS in 2019 will fundamentally alter Medicare physician reimbursement. The implementation of Merit-based Incentive Payment Systems (MIPS) features bonus and penalty opportunities ranging from +/- 4 percent of Medicare reimbursement in 2019 to +/- 9 percent by 2022. Composite score details are still being developed. Common elements are consistent with value-based care initiatives and include a focus on population health; care coordination, information exchange and clinical outcomes; patient safety, the experience of care, engagement and self-management; and comparative episode, condition and total (per capita) costs.

SUSTAINABLE PATIENT BEHAVIOR CHANGE (ENGAGEMENT)

Patient engagement has been defined “as a concept that combines a patient’s knowledge, skills, ability, and willingness to manage his own health and care with interventions designed to increase activation and promote positive patient behavior.”⁷ Patient engagement is critical, as behavioral (lifestyle) patterns and social circumstances represent 40 percent and 15 percent, respectively, of the contributors to premature death.⁸

Patient engagement requires self-management and supportive provider and/or payer interventions. Patients (and their caregivers) are active participants in optimizing their own care, inclusive of changes in lifestyle, treatment (drug) adherence, condition monitoring and intervention.

Despite a theoretical understanding of behavioral change, the availability of remote monitoring and digital health tools, and growing recognition of the importance of self-management, many insurers, employers and providers have not been successful in increasing patient engagement. A study published by RAND Corporation highlighted disappointing results (or lack thereof) from a formal assessment of employer-based health and wellness programs.

Recognition of behavioral change as a complex process requires a fundamental paradigm shift in the provider approach to patient interaction from “push” to “pull.” The change is particularly applicable to the 5–10 percent of patients accounting for 43–68 percent of costs. Unidirectional and infrequent contacts need to be replaced with bidirectional and frequent contacts focused on developing self- management and caregiver support skills. The availability of EMR consumer portals, combined with advent of digital media and enabling technology, facilitates the generation of a lower-cost “pull” approach to whole person care delivery. At least three to six months is required for effective behavior change, with another 6 to 18 months required for sustainability.

As Everett Koop, the former surgeon general, stated, “Drugs don’t work in patients who don’t take them.”⁹

SUGGESTED NEXT STEPS

Change is difficult, particularly for successful health systems with leading market share and strong orthopedic/spinal, cardiovascular and oncology service lines. However, A&M believes change is inevitable due to the growing unaffordability of healthcare and rapidly aging demographics; spending is forecast to increase \$2 trillion in 2017–2025!

Survey data suggests that many individual Americans are satisfied with their personal experience of care. However, from the overall healthcare system perspective, many are dissatisfied due to high costs, system complexity and limited understanding of their condition and treatment.

Western European nations, Japan, Australia and New Zealand have a higher life expectancy, lower mortality rates (for most conditions) and healthcare costs 50–60 percent lower than that of the U.S. on an age adjusted basis. Opportunities clearly exist to improve the efficiency and effectiveness of care delivery in the U.S.

The challenge for executive leadership is to balance the prospects for revenue growth associated with fee-for-service reimbursement with the longer-term transition to at-risk, value-based reimbursement. Activity does not equate with strategic progress. Acquisitions improve the negotiating position of providers vis-à-vis payers and reduce consumer choice but usually do not affect the cost, quality and experience of care.

Context is required before initiating an institutional and/or systemic transformation. All healthcare is local. An operational capabilities assessment, followed by the

implementation of targeted performance improvement initiatives (e.g., labor productivity, physician productivity and compensation, and broadly-defined supply chain) are essential in an increasingly cost-constrained environment. Benchmark comparisons to the 25th or 50th percentiles may not be sufficient due to the embedded inefficiencies of U.S. healthcare delivery. Sustainable improvement will be required.

Improved medical expense management, inclusive of demand, volume and site-of-service (differential) management, as well as a reduction in provider variation across the continuum of care, are required to reduce the total cost of care.

Actionable intelligence (“big data”) will provide the underpinning for strategic and tactical change. Risk management requires additional understanding of population health, inclusive of risk stratification and longitudinal cost, quality and resource utilization drivers. Dashboards do not equate with insights — the latter are irrelevant if not leading to actions that are measurable to create a loop of continuous improvement.

Competitive intensity is a function of market share, breadth and depth of service offerings, referral base, quality of management and financial position. Local markets, counties and states, as well as metropolitan statistical areas, have consolidated. Health system competitors have emerged; individual hospitals may now be able to “tap into” parent capabilities and resources. Portfolio rationalization may be required, as every health system has strong- as well as under-performers.

In summary, the identified provider survival strategies are many and need to consider the local environment. Initiative prioritization is required. A&M expects a three to 10 year transition to value-based care, though the rate of change will vary significantly by market. A visionary approach to change will result in competitive advantage, increased market share and, importantly, a more efficient and effective care delivery system.

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CRITICAL STRATEGIC IMPERATIVES

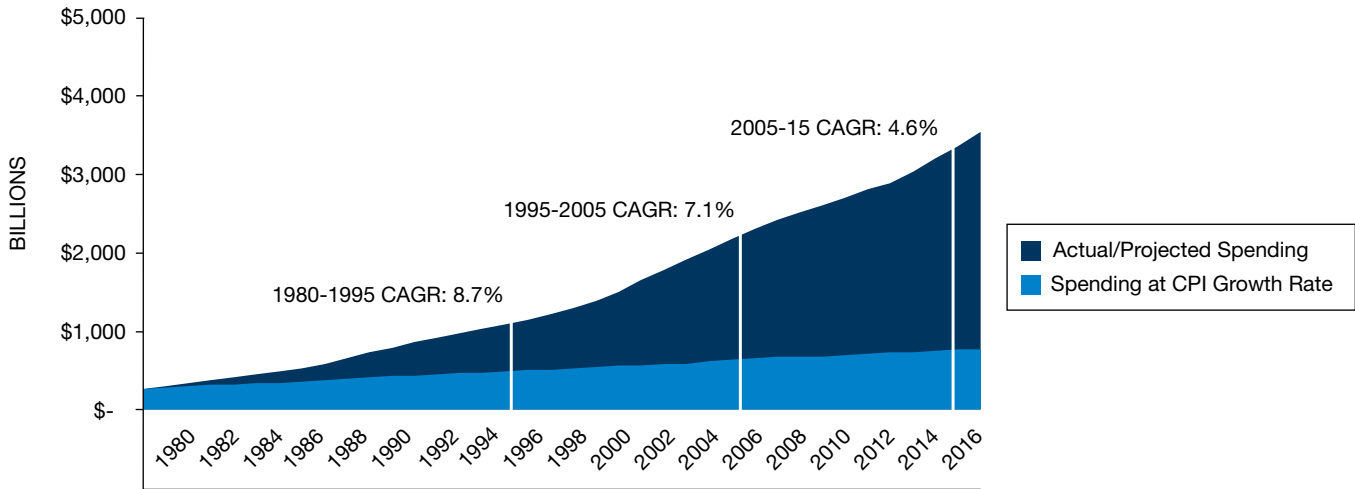
PATIENT CARE (DELIVERY) TRANSFORMATION

Since 1980, national healthcare expenditures have increased at 2.6 times the rate of the Consumer Price Index (CPI), from \$256 billion to \$3.5 trillion in 2017.^{10,11} During this period the percentage of GDP attributed to healthcare has risen from 8.9 percent to 18.3 percent. Repeated attempts at cost containment such as managed care, new payment methodologies, reductions in payment growth, changes to coverage, consumer cost shifting and technology enhancements have had a limited impact on longer-term trends.¹² Many of these initiatives failed to adequately address the fundamental failures of healthcare delivery: fee-for-service reimbursement combined with limited, if any, accountability for health outcomes and the total cost of care.

In 2009, the Institute of Medicine (IOM) convened four meetings to identify opportunities to reduce healthcare costs by 10 percent within 10 years without negatively affecting outcomes. Workshops entitled “Understanding the Targets, Strategies That Work, The Policy Agenda and Getting to 10 percent: Opportunities and Requirements” were attended by leading experts.¹³ Sources of waste

totaling \$765 billion or 30.6 percent of spending were identified, and unnecessary services, inefficiencies, excessive administration, price variation, missed prevention opportunities and fraud were highlighted as causative. Applied to 2016 national health expenditures of \$3.4 trillion implies waste exceeding \$1 trillion!¹⁴

FIGURE 1 | NATIONAL HEALTHCARE EXPENDITURES, 1980–2016



Sources: CMS National Health Expenditures, BLS CPI Inflation Calculator. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>

Despite high levels of spending, the U.S. life expectancy of 78.9 years lags 26 countries behind the leader, Japan, at 83.7 years;¹⁵ premature mortality — the potential years of life lost per 100,000 inhabitants aged 0–69, exceeds that of Chile, Turkey, the Czech Republic, Greece and other countries with a far lower standard of living;¹⁶ and the

infant mortality rate (deaths per 1,000) is comparable to the Slovak Republic and is 65–80 percent higher than that of France and Germany.¹⁷ The U.S. was ranked last in the Conference Board of Canada health benchmarking study of 16 countries based on mortality indicators; cancer was the lone bright spot.¹⁸

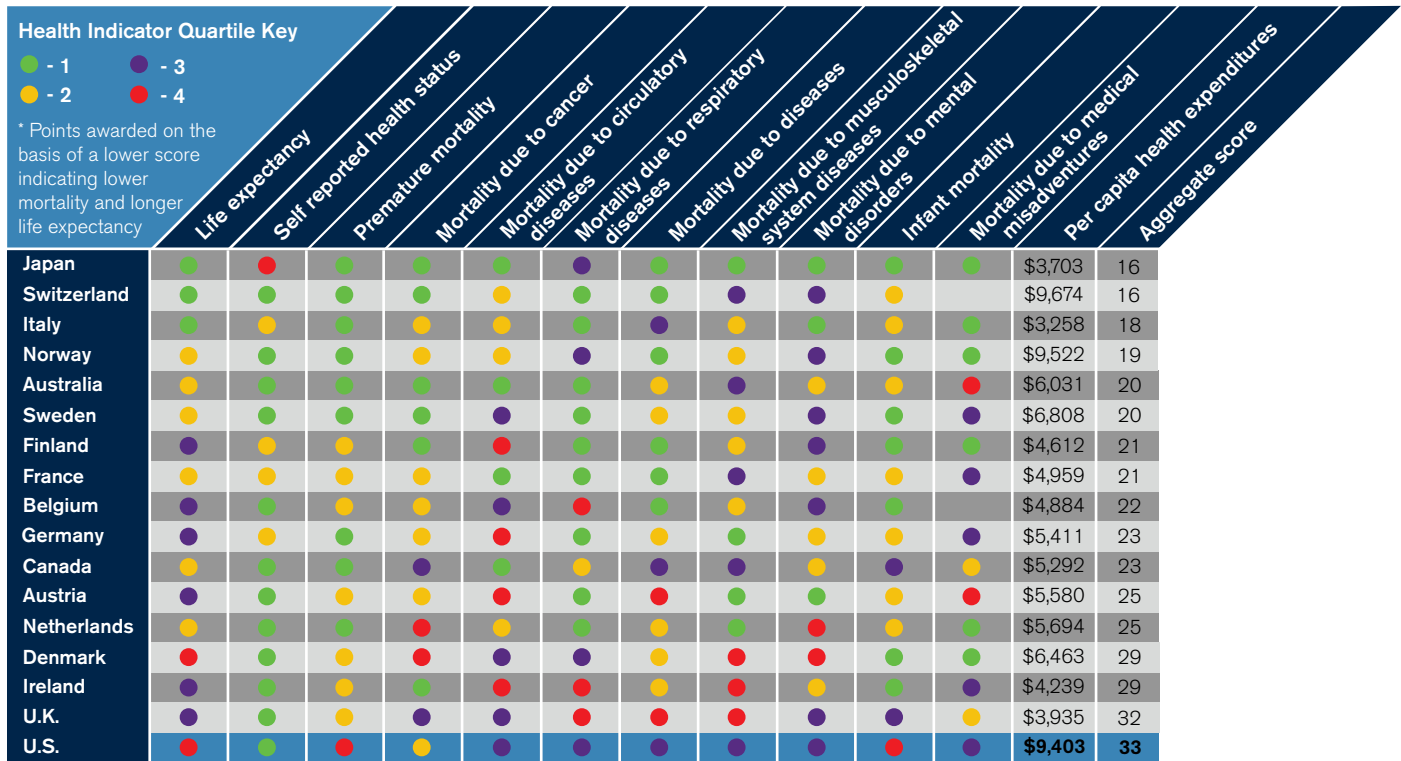
FIGURE 2 | INEFFICIENCY OF U.S. HEALTHCARE DELIVERY

CATEGORY	COST (\$B)	SOURCES OF WASTE
Unnecessary service	\$210	<ul style="list-style-type: none"> • Overuse — beyond evidence established levels • Discretionary use beyond benchmarks • Unnecessary choice of higher-cost services
Inefficiently delivered services	\$130	<ul style="list-style-type: none"> • Mistakes—errors, preventable complications • Care fragmentation • Unnecessary use of higher-cost providers • Operational inefficiencies at care delivery sites
Excess administrative costs	\$190	<ul style="list-style-type: none"> • Insurance paperwork costs beyond benchmarks • Insurers’ administrative inefficiencies • Inefficiencies due to care documentation requirements
Prices that are too high	\$105	<ul style="list-style-type: none"> • Service prices beyond competitive benchmarks • Product prices beyond competitive benchmarks
Missed prevention opportunities	\$55	<ul style="list-style-type: none"> • Primary, secondary and tertiary prevention
Fraud	\$75	<ul style="list-style-type: none"> • All sources—payers, clinicians and patients
TOTAL	\$765	2009 National Health Expenditures: \$2.501B

Source: *The Healthcare Imperative: Lowering Costs and Improving Outcomes*, 2010 Table S-1. Adopted by National Academy of Sciences from IOM Workshop Summary.

FIGURE 3 | INEFFECTIVENESS OF U.S. HEALTHCARE DELIVERY

International Mortality Health Indicators Report Card



Source: The Conference Board of Canada

The inefficiency and ineffectiveness of care delivery are but a couple of the catalysts for healthcare transformation. Others include growing unaffordability for >25 percent of the population, a rapidly aging population, CMS payment reform initiatives focused on value (not volume), a growing shortage of primary care physicians, emerging technology and recognition of the need for data-enabled care coordination and patient management.

CMS has taken a leading role in reforming Medicare and, by default, the entire healthcare system. In 2016, Medicare accounted for 20.2 percent of national healthcare expenditures (\$3.4 trillion) and 24.7 percent of total hospital spending (\$1,086.3 billion).¹⁴ After several years of evolutionary changes, mostly voluntary but a few mandated, the U.S. Department of Health and Human Services (HHS) Secretary Sylvia Burwell made the following announcement on January 26, 2015:

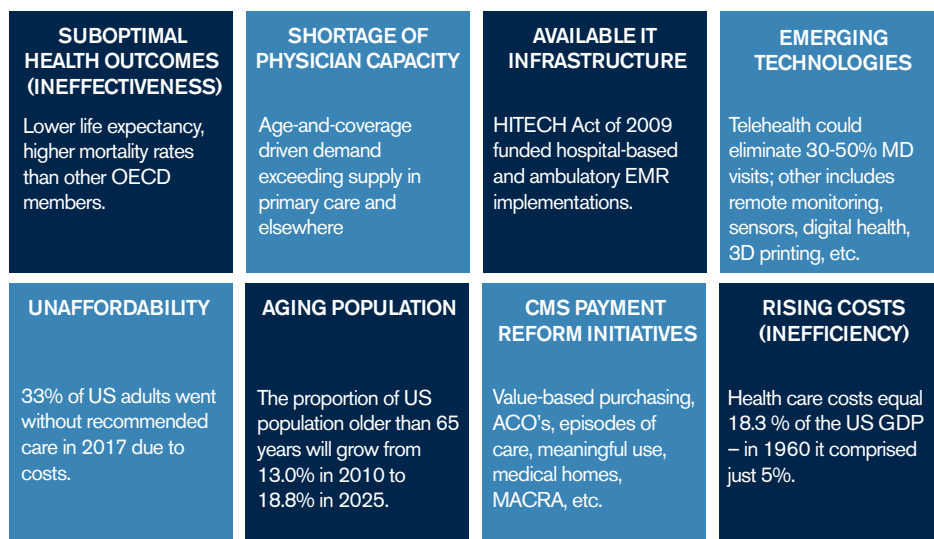
“Today, for the first time, we are setting clear goals – and establishing a clear timeline – for moving from volume to value in Medicare payments. We will use benchmarks and metrics to measure our progress; and hold ourselves accountable for reaching our goals. Our first goal is for

30% of all Medicare provider payments to be in alternative payment models that are tied to how well providers care for their patients, instead of how much care they provide – and to do it by 2016. Our goal would then be to get to 50% by 2018. Our second goal is for virtually all Medicare fee-for-service payments to be tied to quality and value; at least 85% in 2016 and 90% in 2018.”¹⁹

Medicare is often seen as the bellwether for reimbursement change by commercial payers. Medicare Accountable Care Organization (ACO) membership (8.2 million) is far exceeded by that of commercial plans (17.2 million). Commercial payers have benefited from the process-of-care changes instituted by health systems to meet CMS requirements. However, we view the current ACO model as evolutionary due to its reimbursement limitations; e.g., spending benchmarks, out-of-network expenditure inclusion.

In a December 2016 press release, the Health Care Transformation Task Force, comprised of 43 health systems and payers, affirmed “their support for the transition to value-based care that reduces cost, improves quality, and more sharply focuses on patient needs ... and to urge the

FIGURE 4 | CATALYSTS FOR PATIENT CARE (DELIVERY) TRANSFORMATION



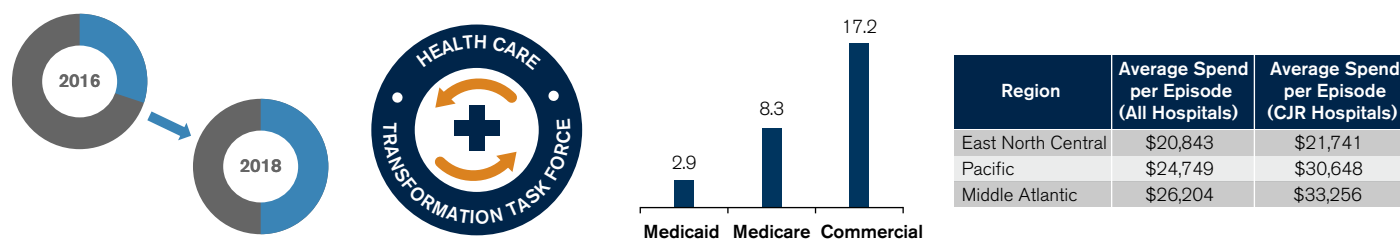
Source: <http://www.commonwealthfund.org/publications/in-the-literature/2016/nov/2016-international-health-policy-survey-of-adults>; commentary added by Alvarez and Marsal

industry to continue its important evolution to a modern payment and care delivery system that provides high value, affordable health care through a competitive marketplace.”²⁰

The election of President Trump and appointment of Tom Price, M.D., may somewhat slow the transition to value-based care, but it will not reverse the trend; the “train has left the station.” An example is CMS’s recently released proposal to eliminate bundled payment models targeting cardiac care (acute myocardial infarctions,

coronary artery bypass grafts), orthopedics (surgical hip and femur fracture treatments) and cardiac rehabilitation, and reducing the number of mandated comprehensive care joint replacement (CJR) markets from 67 to 34.²¹ The resignation of Dr. Price on September 29, 2017 may alter the animus and next steps for bundled payment models. The rationale for bundled payments, excessive provider variation across the continuum, remains and potentially offers a competitive advantage to lower-cost health systems during their contract and network negotiations with payers.

FIGURE 5 | GROWTH OF AT-RISK, VALUE-BASED CARE



The Department of Health & Human Services (HHS) set a goal of tying 30% of FFS Medicare payments to quality or value through alternative payment models by the end of 2016 and 50% by 2018

Twenty health systems, health plans, consumer groups and policy experts formed the Health Care Transformation Task Force, and aim to have 75% of their business based on value by 2020

Despite growth in number of participants and covered lives, ACO model limitations such as variation in regional spending benchmarks, weak correlation between quality scores and savings, and a limited ability to generate savings have emerged.

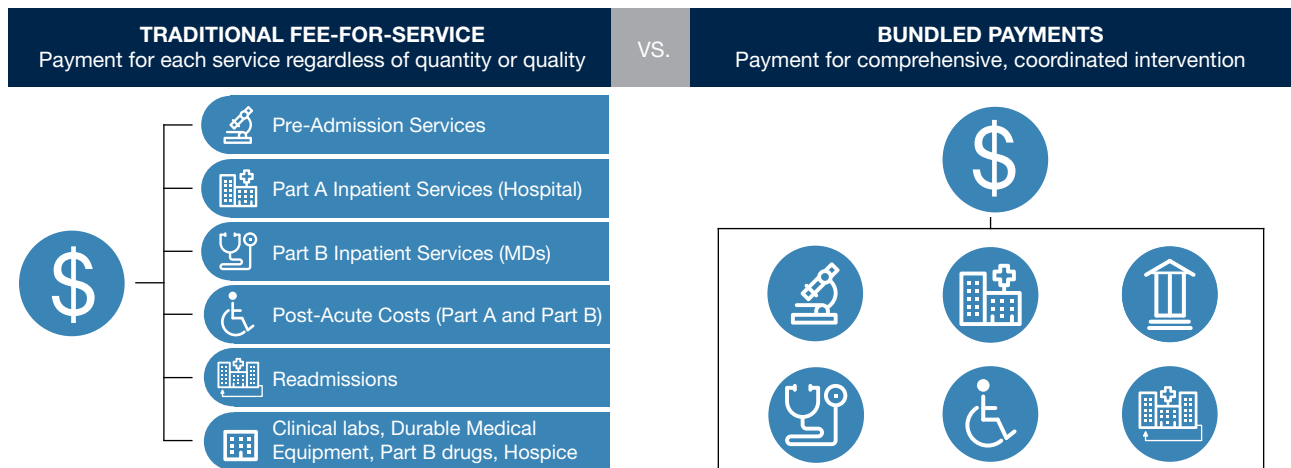
Comprehensive Joint Replacement (CJR) mandate in 67 markets (800 hospitals) effective April 2016; expanded to hip fractures. Cardiovascular episode payments also implemented

Source: HealthLeaders Media Intelligence, “Industry survey: HealthLeaders Media 2014, Forging healthcare’s new financial foundation,” January 2014, <http://content.hcpro.com/pdf/content/299648.pdf>, accessed March 16, 2016

FIGURE 6 | MEDICARE FOCUS ON QUALITY, OUTCOMES AND TOTAL COST OF CARE

PIONEER ACO	ISSUE	NEXT GEN ACO
In performance year 5 in 2016	Timeline	Begin 2016; 3-year agreement period
60% shared risk & savings	Financial Risk	80%-100% shared risk & savings
3-year historic baseline	Benchmark	One-year historic baseline
Most claims paid under traditional fee-for-service (FFS)	Payment Mechanism	Four payment options: Traditional FFS; FFS with monthly infrastructure payments; population-based payments; capitation
Quality score determines savings/losses sharing rate	Quality	Quality score determines quality component of benchmark discount

COMPREHENSIVE CARE JOINT REPLACEMENT: SURGERY + HOSPITAL + POST-ACUTE = 90-DAY EPISODE

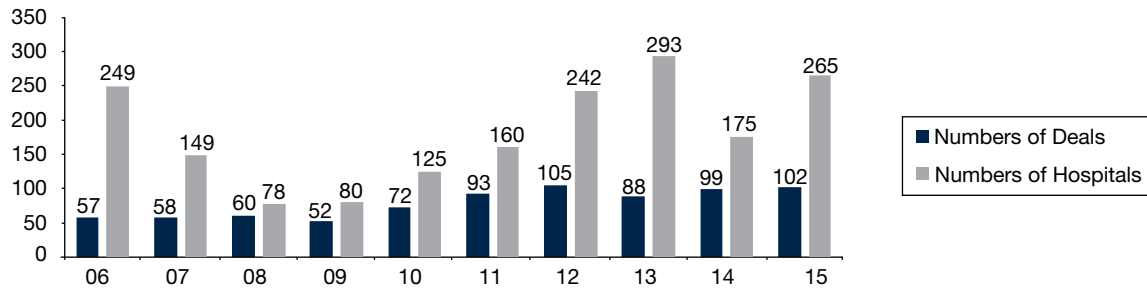


Source: CMS

According to Irvin Levin Associates, the average number of hospitals each year in announced deals in 2011–15 of 227 was 67 percent higher than the 136 announced in 2006–2010.²² Major for-profit acquisitions include Steward Healthcare – IASIS Health System (2017), Community Health Systems – Health Management Associates (2014) and Tenet Healthcare – Vanguard Health Systems (2013). Nonprofit acquisitions and mergers have also occurred based on geographic expansion (Catholic Health Initiatives’ purchase of St. Luke Episcopal Health and

Memorial Health System in Texas, Sylvania Franciscan Health System in Ohio and the St. Alexis Health System in North Dakota) and local market share gains (Mt. Sinai Health System – Continuum Partners, Hackensack NJ – Meridian, Barnabas Health – RWJ Health System). The dramatic increase in debt for some of these systems has led to an increase in divestiture activity in 2017, as evidenced by recent Community Health Systems’ efforts inclusive of the Quorum spinoff.²³

FIGURE 7 | ANNOUNCED HOSPITAL MERGERS AND ACQUISITIONS, 2006–2015



Source: Irving Levin Associates, Inc. (2016). *The Health Care Services Acquisition Report, Twenty-Second Edition*.

- (1) In 2004, the privatization of Select Medical Corp., an operator of long-term and acute-care hospitals, and divestiture of hospitals by Tenet Healthcare Corporation helped to increase the number of hospitals affected.
- (2) In 2006, the privatization of Hospital Corporation of America, Inc. affected 176 acute-care hospitals. The acquisition was the largest health care transaction ever announced.
- (3) In 2013, consolidation of several investor-owned systems resulted in a large number of hospitals involved in acquisition activity.

Health systems have also been acquiring physician practices. The number of physician practices owned by hospitals / health systems rose 86 percent between 2012–15, with 38 percent of U.S. physicians employed by hospitals and health systems. The rationale for many of these acquisitions has been to increase patient capture, referrals and market share; and to gain higher prices.²⁴ Results have been mixed, with acquisitions, when combined with EMR requirements, often leading to a reduction in physician productivity.

Industry consolidation does not imply positive change, i.e., increased efficiency and effectiveness. It does, however, imply even higher prices.²⁵

The magnitude of change required for transformation to an at-risk, value-based healthcare delivery system is significant. Compounding the challenge is a healthcare system comprised of stakeholders primarily interested in their own financial sustainability, a system that is not necessarily aligned with those of outcome-centric patients and cost-oriented payers (employers). The availability of “big data” and, more importantly, actionable insights will provide measurable transparency to an opaque system subject to profit-maximizing obfuscation. Executive leadership (visionary, strategic and operational) will be essential, especially during the three to 10 year transition period from fee-for-service to value-based reimbursement. The hospital-centric healthcare delivery system that has

FIGURE 8 | EMERGING HEALTHCARE DELIVERY MODELS

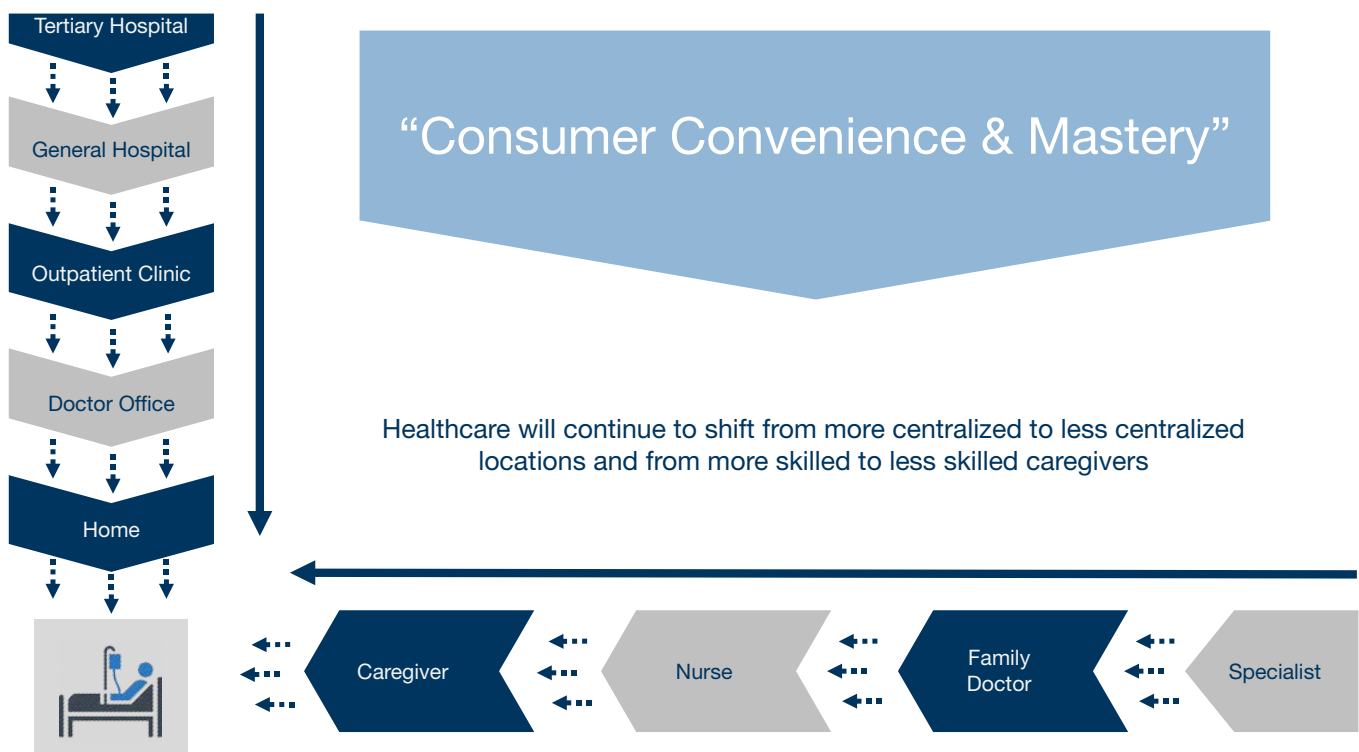
EVOLUTION OF HEALTHCARE DELIVERY MODELS	
CURRENT PROVIDER MODEL	EMERGING PROVIDER MODEL
Volume-driven	Value-driven
Facility and/or procedure cost	Total cost of care
Acute intervention	Proactive intervention and prevention
Disease/condition-centric	Patient-centric (co-morbidities, social determinants)
Process quality measures	Outcome quality measures
Facility-centric	Home-centric
Care fragmentation	Care integration
Uncoordinated care delivery	Coordinated care delivery
Silo'd	Across the continuum of care
Subjective (i.e., based on experience)	Objective (i.e., based on data insights)
Poor patient experience	Enhanced patient experience
Limited patient/caregiver engagement	Increased self-management
Performance: margin per service or procedure	Performance: Margin per covered or attributed life

emerged during the past few years does not (yet) fully capitalize upon the opportunities for prevention, proactive intervention, care coordination, patient engagement, self-management and, importantly, for cognitive (non-procedural) primary care physicians.

Value-based payment initiatives, primarily driven by CMS and, to a lesser extent, Medicare Advantage, recognize the primacy of prevention, earlier intervention and non-facility, community based care. Hospitals, rehabilitation facilities, long-term acute care hospitals and skilled nursing facilities are far more expensive than home care for specific types of services (skilled, instrumental and activities of daily living support). As a result, community hospital inpatient volume has declined an average of 320,000 discharges (1.0 percent) per annum in 2010–15, a figure understated relative to the age adjusted population growth. Negative volume drivers include a decline in the rate of preventable admissions and readmissions inclusive of a cardiovascular admissions reduction of 25.2 percent between 2005 and 2014, increased observation stays and a volume shift of surgical procedure volume from inpatient to ambulatory centers.²⁶

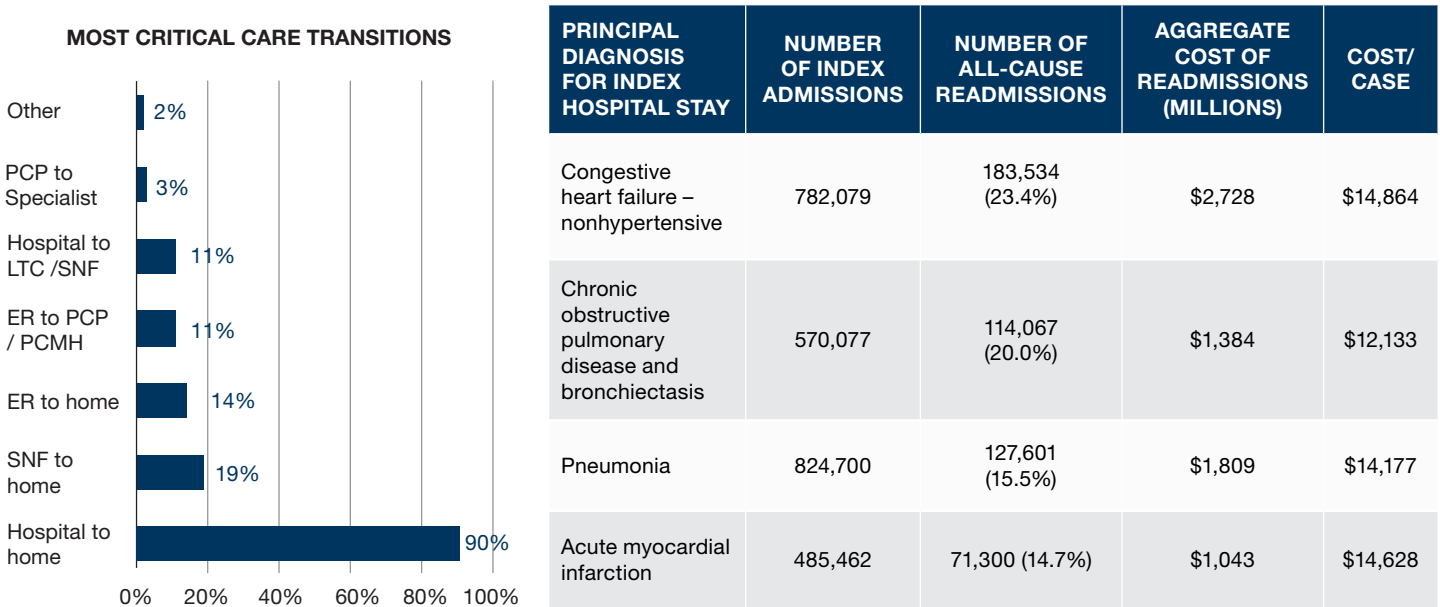
Hospital discharge, typically to home or a skilled nursing facility, represents a critical juncture for patients and their families. The potential for complications, relapse and/or readmission are recognized. CMS payment reform initiatives have increased provider focus on discharge planning and, if appropriate, case management for the highest-risk patients. The discharge planner not only focuses on the medical needs of a patient, but also on social determinants such as socio-economic, psychosocial, environmental and behavioral factors that may lead to negative outcomes. Medication reconciliation, a timely visit with a primary care physician and accessible communications are critical to prevent readmission. The advent of episode payment models such as Comprehensive Care for Joint Replacement, downplayed by Secretary Price, has been critical to the extension of the former post-discharge focus period by hospitals and health systems from 30 to 90 days.

FIGURE 9 | SITE OF SERVICE SHIFT FROM FACILITY TO HOME



Sources: Clayton Christensen, Harvard Business School; Regina Herzlinger, Harvard Business School

FIGURE 10 | CRITICALITY OF TRANSITION MANAGEMENT



Source: https://www.slideshare.net/H_J_N/2013-benchmarks-in-care-transitions-management; Agency for Healthcare Research and Quality; Center for Delivery, Organization, and Markets, Healthcare Cost, and Utilization Project, Nationwide Readmissions Database

Risk stratification, combined with the identification of gaps in care — the discrepancy between evidence-based best practices and the care that’s actually delivered to the patient — are critical elements to care transformation.²⁷ For an employer, 5 percent of plan members account for 47 percent of healthcare costs, with another 5 percent accounting for an additional 17 percent; in total, 10 percent of plan members account for nearly two-thirds of costs.²⁸ Medicare patient population costs are somewhat more distributed, whereas for Medicaid it’s slightly more concentrated. High-cost members include those with an acute event (e.g., knee replacement) that is typically resolved within a single year; a condition, usually post-acute, that results in high costs for a few years (e.g., major trauma requiring repeat surgeries and/or rehabilitation, certain types of cancer); or a chronic condition requiring a lifetime of high expenditures (e.g., multiple sclerosis, kidney failure, frail elderly.)

Americans >65 years represent 13 percent of the population and account for a disproportionate 34 percent of expenditures. Medicare spending per beneficiary increases from \$7,859 to \$12,805, +63 percent from the ages of 65–74 to 75–84, consistent with the impact of an increase in the number and severity of comorbid chronic conditions and the high cost of end-of-life care. The incremental rise in spending for the >85 population can be largely attributed to cognitive decline, with Alzheimer’s disease and other forms of dementia affecting

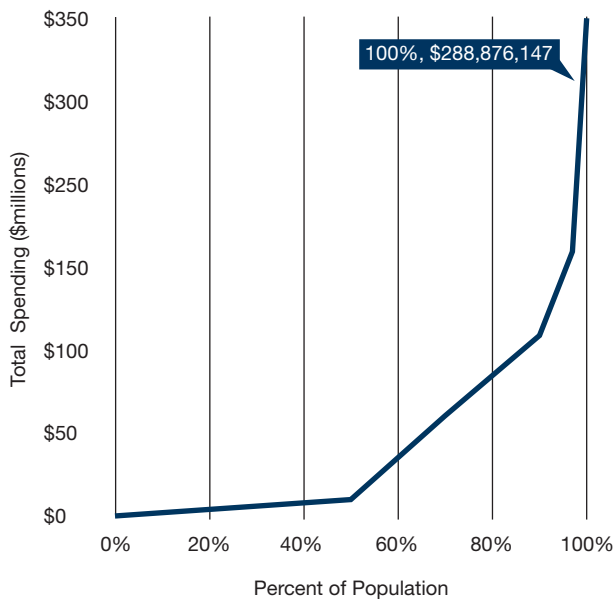
nearly one-third of the population and often leading to institutionalization and/or other forms of community-based support (paid by Medicaid and out-of-pocket).

The chronic disease life cycle is typically progressive and subject to acute, intermittent events. Exacerbations may occur due to failure to comply with the treatment regimen, inclusive of diet, activity and medications; inadequate medical management; or infection and other organic events. The key to effective chronic care management rests with altering the disease life cycle by focusing on prevention, executing precisely timed intervention and increasing patient (and caregiver) engagement.

In 1998, Edward Wagner, M.D., lead developer of the Chronic Care Model, introduced an evidence-based framework for healthcare that delivers safe, effective and collaborative care to patients, and recognizes the supremacy of primary care, care coordination, team-based care, site transition management and self-management.

The Chronic Care Model recognizes the centrality of primary care physicians to manage and coordinate the care of aging patients with multiple chronic conditions across the entire continuum. Despite the recognition, primary care physicians are overworked, underpaid and under-appreciated, relative to procedure-oriented specialists. Throughput rather than cognition and the potential for preventative activities remain the primary

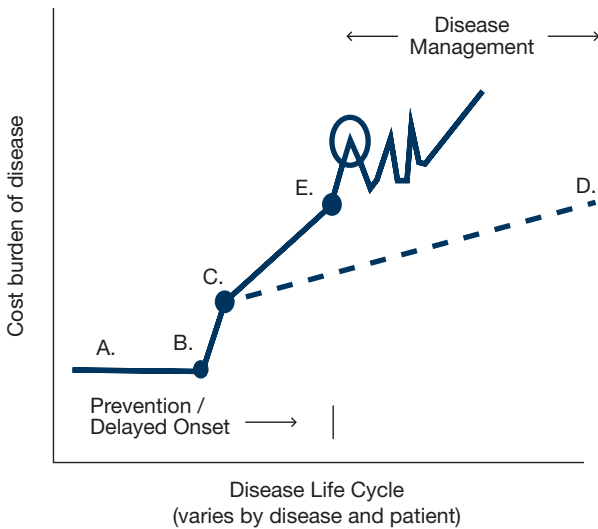
FIGURE 11 | RISK STRATIFICATION HIGHLIGHTS DISPROPORTIONATE SPENDING



EMPLOYER SPONSORED INSURANCE IN THE US: DISTRIBUTION OF COST FOR 50,000 EMPLOYEE COMPANY			
RISK LEVEL	INCREMENTAL % OF POPULATION	% OF TOTAL EXPENDITURES	EXPENSE PER ENROLLEE
Low Risk (Low)	50%	3%	\$347
Medium Risk (Low)	30%	17%	\$3,274
Medium Risk (High)	10%	16%	\$9,244
High Risk (Low)	5%	17%	\$19,644
High Risk (High)	5%	47%	\$54,309

Sources: AHRQ,CMS

FIGURE 12 | SHIFTING PROVIDER FOCUS TO CHRONIC DISEASE MANAGEMENT

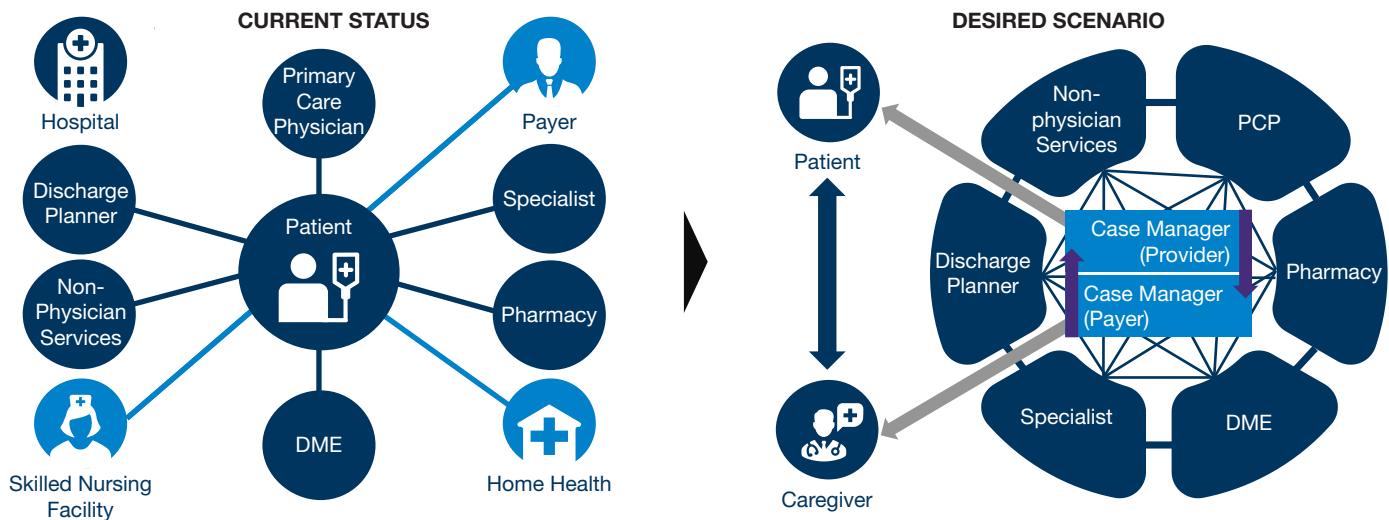


INFLECTION POINT	
A. Disease onset	D. Good medical management with disease progression
B. Diagnosis	E. Poor medical management with disease progression and acute exacerbations
C. Management initiated	

LEVELS OF PREVENTION

<p>PRIMORDIAL PREVENTION</p> <p>Whole population through public health policy</p>	<p>Establish or maintain conditions to minimize hazards to health</p> <p>Advocacy for social change to make physical activity easier</p>
<p>PRIMARY PREVENTION</p> <p>Whole population – selected groups and healthy individuals</p>	<p>Prevent disease well before it develops</p> <p>Reduce risk factors</p> <p>Primary care advice as part of routine consultation</p>
<p>SECONDARY PREVENTION</p> <p>Selected groups with high risk patients</p>	<p>Early detection of disease (e.g. screening and intervention for pre-diabetes)</p> <p>Primary care risk factor reduction for patients at risk of chronic diseases, falls, injury, etc.</p>
<p>TERTIARY PREVENTION</p> <p>Patients</p>	<p>Treat established disease to prevent deterioration</p> <p>E.g. exercise advice as part of cardiac rehabilitation</p>

FIGURE 13 | EFFECTIVE CARE COORDINATION ESSENTIAL



**Patients identified based on cost/risk and disease stratification*

drivers of compensation. The growing shortage of primary care physicians is forecast to worsen due to retirements, compounded by the potential of a 25–35 percent reduction in physician productivity following hospital acquisition.²⁹ Electronic medical records, expected to enhance productivity, have created dissatisfaction and worsened the situation due to “poor usability that did not match clinical workflows, time-consuming data entry, and overwhelming numbers of electronic messages and alerts.”³⁰ Care extenders such as nurse practitioners and physician assistants are adjunctive and not a replacement for highly trained primary care physicians in a system focused on the total cost of care. Directional progress has been made by policymakers and health systems toward implementation of the Wagner model, but full implementation of all the necessary components has yet to be achieved.³¹

Care coordination is exceedingly difficult in a highly fragmented healthcare delivery system incented by “piecemeal” fee-for-service reimbursement. Limited healthcare literacy, combined with the lack of a primary contact point, minimal caregiver involvement and payment strains often result in patient uncertainty regarding the treatment plan. Caregivers, an under-recognized resource, usually female, assist the elderly, ill, disabled, family and non-family members with activities of daily living and medical tasks on a voluntary basis.

Caregivers may “help to shop and buy groceries; prepare meals, cleans house or does laundry; help with activities of daily living like dressing, bathing, administering medications; aid with transferring the recipient in and out of bed; assist with physical therapy, injections, feeding

tubes, or other medical processes; arrange the medical appointments and transportation to the doctor or clinic; order and pick up medications at the drugstore; discuss the care plan and needs with the doctors and care managers; handle a crisis or medical emergency; and fill the designated ‘on-call’ position for the family member.”³²

All these activities affect patient recovery, clinical outcomes and mental status. According to the National Alliance for Caregiving and AARP, approximately 43.5 million Americans provided unpaid care to an adult or child in the last 12 months, 34.2 million (78.6 percent) for adults >50 years. The estimated economic value of their services is \$470 billion.³³

The lack of coordination extends among providers, payers and other stakeholders with a vested financial interest. Payer disease management programs (incorporating health coaches in remote call centers, patient education, reminders and feedback) are usually independent of provider efforts to improve health outcomes. A seminal study of commercial disease management programs for 250,000 Medicare patients did not find a reduction in hospital admissions, ER and net expenditures between the intervention and the usual care (control) group.³⁴ According to the lead author, “telephone contact or an occasional visit does not achieve the cost savings ... Our results suggest that for such programs to be effective, they would need to be supplemented by intensive, costly, personal clinical attention.”³⁵ Other disease management studies have shown mixed results, with several investigators suggesting that studies with positive results have exhibited self-selection bias, i.e., enrollees tend to be more highly motivated than the population at large.^{36,37}

Case managers have a challenging role focused on prevention, proactive intervention and transitions of care. They facilitate care for patients with complex chronic comorbid conditions and/or psychosocial needs, coordinate care to assure quality outcomes in the most cost-effective manner, reduce avoidable hospital admissions, reduce gaps in care, impact practice quality scores and engender self-management capabilities, i.e., the ability to identify changes in health status and be compliant with a treatment plan. They require timely access to data, information and insights regarding patient status.

The misalignment of financial incentive poses challenges to case managers employed by health systems and hospitals. Site of service reimbursement differentials have increased between offerings provided by hospital outpatient clinics (e.g., diagnostic imaging, echocardiograms, ambulatory surgical centers and oncology drug infusion centers) and non-hospital private practice providers. Lower-cost care (of equal quality) is often available in the community that would potentially reduce the revenues of the case manager's employer. The misalignment issue still requires resolution.

Opportunities also exist for case managers to become increasingly engaged with palliative and hospice care, as 25–30 percent of Medicare expenditures are spent in the last year of life; the average cost in the final year of life, \$82,343, as calculated by A&M, is 10 times the cost of surviving Medicare recipients.³⁸ Our calculation is based on a previously published estimate of last year of life costs as a percentage of total Medicare spending and the number of deaths in the population >65 years irrespective of cause.^{39,40}

Evidence-based medicine is a function of clinical expertise, best practices and patient values and preferences. According to the Institute of Medicine, clinical guidelines are “statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.”⁴¹ Recommendations are not infallible and “may be wrong (or at least wrong for individual patients)” due to limited or misinterpreted scientific evidence and the undue influence of guideline development group members (subject to their own clinical bias and nonclinical factors such as cost).⁴² As a result, many health systems, hospitals and physicians utilize guidelines as one of several factors involved in managing specific patients.

FIGURE 14 | CASE MANAGEMENT APPLIED TO HIGH-COST / HIGH-RISK PATIENTS

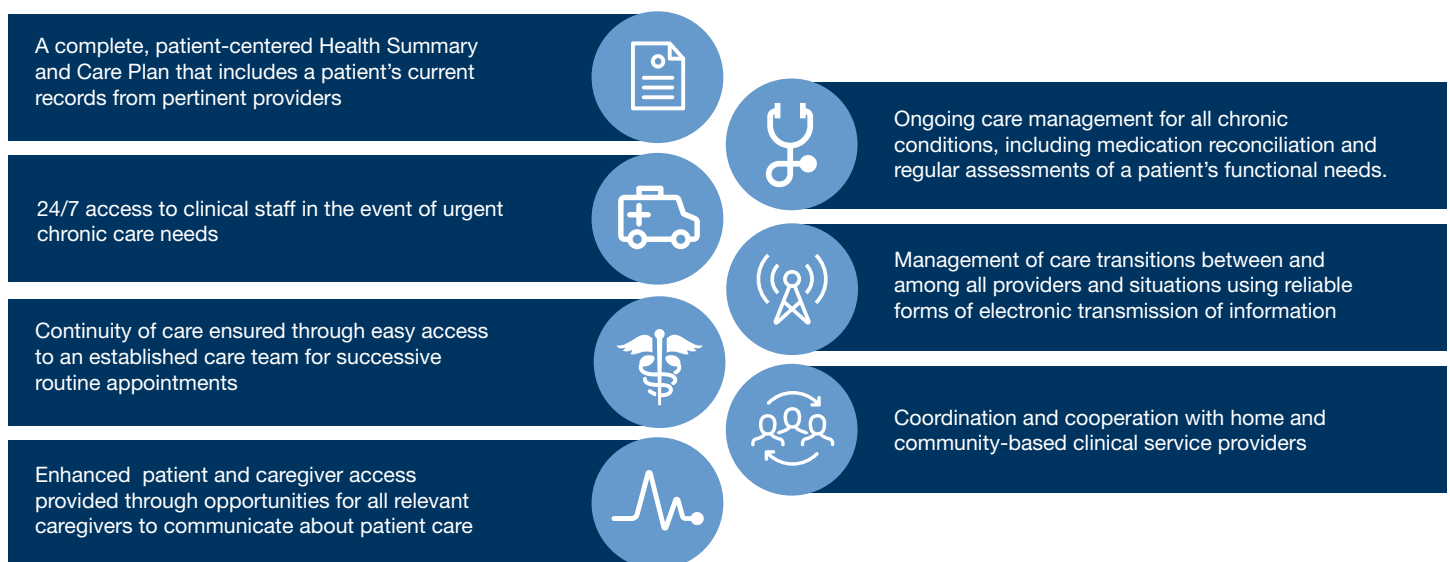
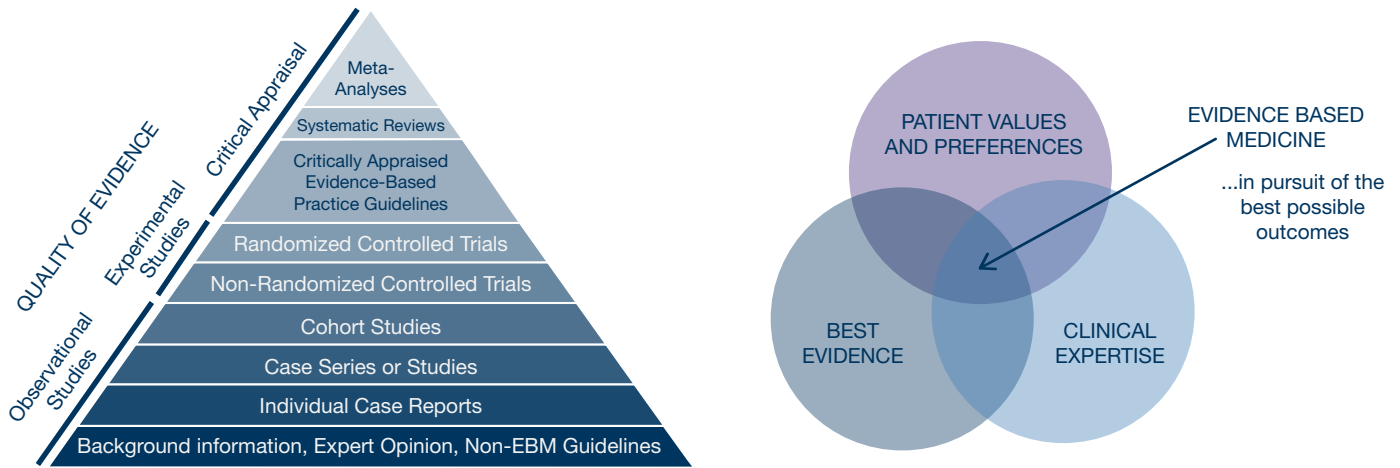


FIGURE 15 | ADOPTION OF EVIDENCE-BASED PRACTICES TO REDUCE PROVIDER VARIATION



Utilization management (UM) represents an evidence-based, clinical support process to assist physicians, other providers and payers in evaluating the use of medical services based on medical necessity, appropriateness and efficiency.⁴³ UM may be performed prospectively, concurrently and retrospectively. Historically, UM has been viewed by payers as a means to reduce inpatient and outpatient costs. The emerging, at-risk care delivery system presents an opportunity for an effective UM program to benefit providers and patients through enhanced discharge planning, reduced provider variation and continually improved process-of-care.

The advent of Accountable Care Organizations, value-based purchasing readmission penalties and episode-based reimbursement highlights the importance of patient

discharge destination. In 2012, there were 13.7 million hospital discharges of people >65 years: 48.0 percent were sent home, 43.6 percent received post-acute care services (i.e., skilled nursing facility, home healthcare, inpatient rehab facility and long-term acute care hospital), 3.2 percent died and 2.2 percent transferred to another hospital.⁴⁴ A risk-adjusted analysis of destination sites highlights a broad range of spending without a commensurate relationship to health outcomes.

Significant variation in the utilization of acute inpatient, post-acute and outpatient services by physician exists. Inpatient variation is notable for specific risk-adjusted conditions in terms of length of stay, complications, mortality, use of ancillary resources (e.g., imaging, labs), outpatient / observation stays, admission rates, gaps in care and

FIGURE 16 | EXPANSION OF PROVIDER UTILIZATION MANAGEMENT



PROSPECTIVE OR "PREAUTHORIZATION" (INPATIENT, OUTPATIENT)

Nurses assess proposed surgeries, procedures, ancillary tests and other health care services. If the available clinical information does not support the medical appropriateness of the requested procedure or service, then clinical indications and alternative treatments are discussed with the physician by the nurse and if necessary, the insurance plan medical director.



CONCURRENT REVIEW (INPATIENT), INCLUSIVE OF DISCHARGE PLANNING

Involves screening for medical necessity and the appropriateness/ timeliness of the delivery of medical care from the time of admission until discharge. Objectives are to ensure that doctor orders are carried out in an efficient and accurate manner, to anticipate treatment, plan ahead and to continually monitor the patient's progress and facilitate discharge planning, the latter involving a review of alternate levels of care, the need for ancillary services and the potential benefits of home support.



RETROSPECTIVE

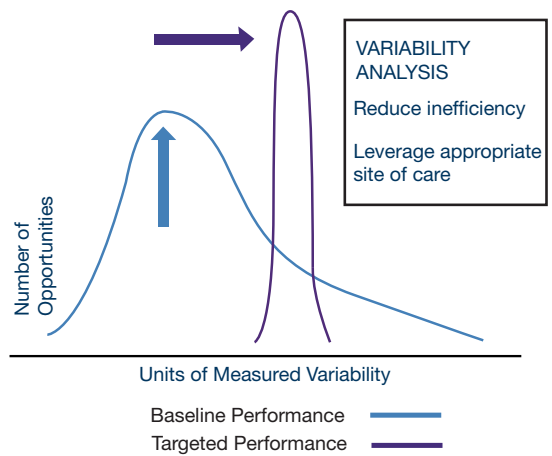
Includes an analysis of length of stay and other metrics at the institutional, group practice, and individual physician level. Efforts are made to identify gaps in care and unusual utilization patterns, develop clinical guidelines, conduct (registry) outcome studies and work with providers to alter practice patterns, as necessary.

FIGURE 17 | EXTENSION OF QUALITY MANAGEMENT

CRITERIA FOR MEASUREMENT OF HEALTH CARE QUALITY		
CRITERIA	REPRESENTATIVE ITEMS MEASURED	WHAT IS EVALUATED
Structure	<ul style="list-style-type: none"> Licensure (faculty and professional) Compliance with health and safety codes Medical staff appointment Board certification 	Environment in which services are provided; whether there is adequate capability to provide the services offered
Process	Specific ways care is provided: <ul style="list-style-type: none"> Laboratory and radiology test Diagnostic approaches Drugs prescribed Therapeutic procedures 	Evaluate against national criteria and standards for specific diagnostic categories and procedures
Outcome	Midpoint and end results of the clinical care process: <ul style="list-style-type: none"> Morbidity Mortality Infection rates Complication rates 	Combine other measures by examining the end results of care

Source: <http://imaging.ubmmmedica.com/CME/pt/content/p981245.gif>; http://ajslp.pubs.asha.org/data/Journals/AJSLP/934712/m_AJSLP_24_4_S854fig1.jpeg;

**EVIDENCE BASED PRACTICE:
MINIMIZES VARIABILITY WHILE IMPROVING QUALITY**



Reporting requirements: NCQA, HEDIS, HCAHPS, STAR Ratings, PQRS, Consensus Core Set (CCS), Healthcare Compare, Value-based Purchasing (VBP), Hospital Acquired Conditions (HAC), re-admissions, Leapfrog Group, MACRA

other areas. Post-acute variation is notable for its site of service, length of stay, complication and readmission rate. Variation in the ambulatory care-sensitive hospitalization rate suggests opportunities for improved chronic disease management. Quality metrics are being rationalized to enhance care delivery processes and improve outcomes. Physician-led peer review (utilization management) and teamwork for high-value care are essential components of the Mayo Clinic’s group medical model.⁴⁵

Technology remains critical to patient care (delivery) transformation. Medical management, population

health, discharge plans, case management and patient / caregiver engagement require data, information and, most importantly, actionable insights for effective implementation. Remote monitoring, telemedicine and digital health increase access and, potentially, the timeliness of intervention.

In summary, the transition from fee-for-service to value-based reimbursement will require transformation of care delivery. A measurable, integrated, patient-centric and cost-effective approach focused on improving outcomes – if well-executed – will ultimately lead to a sustainable competitive advantage.

FIGURE 18 | CHANGING ROLE OF TECHNOLOGY INFRASTRUCTURE

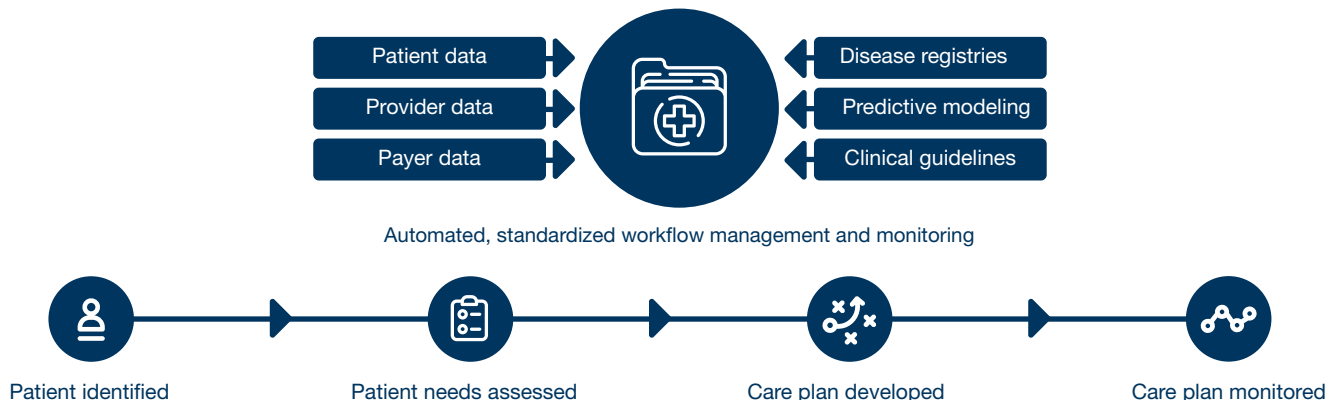
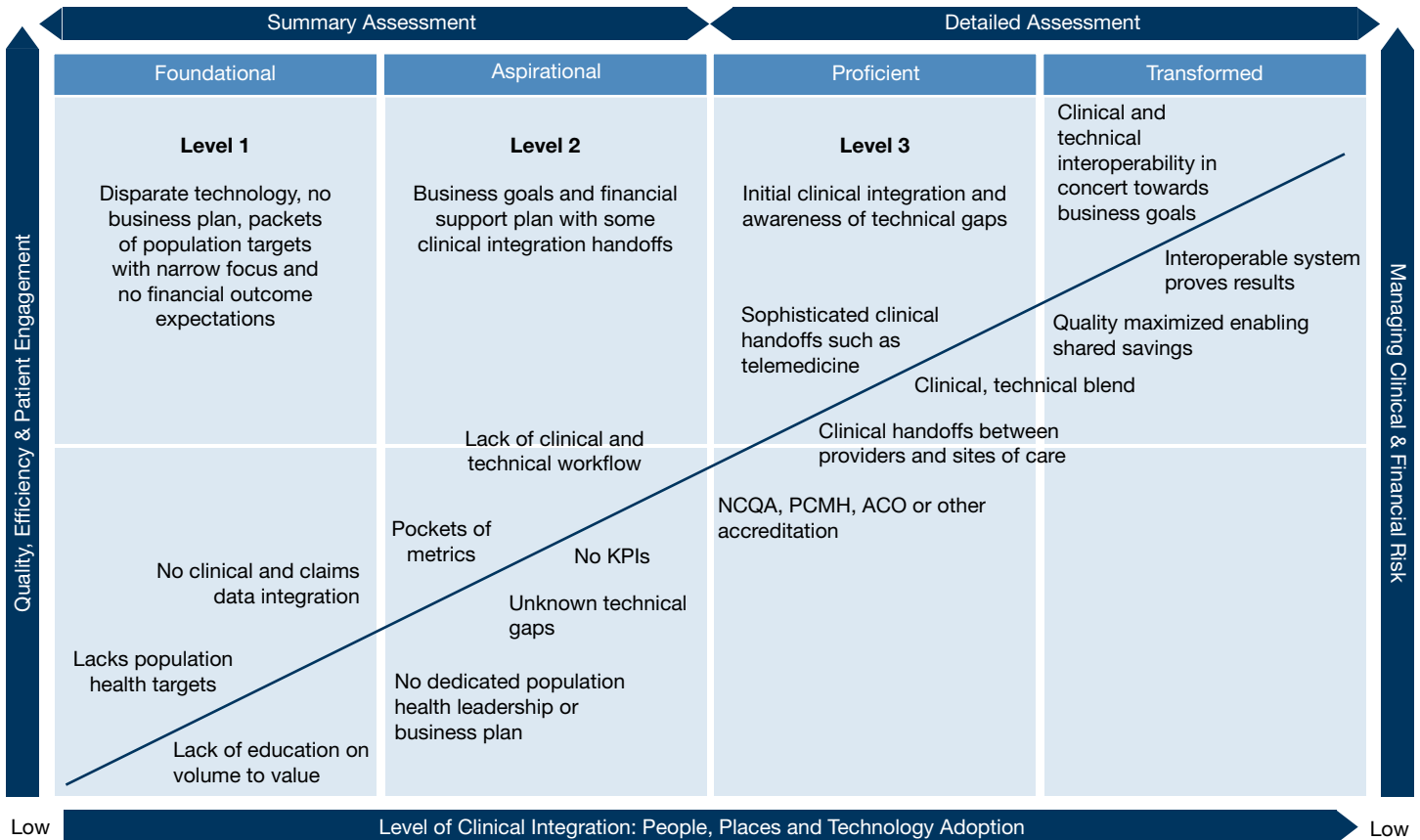




FIGURE 19 | CARE DELIVERY TRANSFORMATION GRID



POPULATION HEALTH TARGETING THE 5–10 PERCENT

A survey by the Milken Institute of Public Health at George Washington University in 2015 identified only two of 37 (5.4 percent) surveyed executives using the original definition of population health focused on the “health outcomes of a group of individuals,” as defined by David Kindig, M.D., PhD, and Greg Stoddart, PhD, in 2003. Other surveyed executives reference specific considerations such as costs, the target population (“community, a group of employees, insurance plan enrollees, etc.”), proactive intervention (prevention), care delivery and/or redesign (disparity, provider variation, value-based, primary care-centric model, evidence-based and “silo-focused to a communal effort”), the care continuum, individual responsibility, social determinants, “population longevity and quality of life,” continuous improvement of operational activities, measurement, the Triple Aim and “taking an analytical approach.”⁴⁶ Alvarez & Marsal incorporates elements of the Kindig and Stoddart definition, while adding cost and management considerations to the focused target population accounting for the majority of healthcare expenditures.

Our target population is most concentrated for Medicaid and least concentrated for Medicare. It is not always possible to proactively identify the highest-cost patients within each payer group, but epidemiologic data certainly allows for the identification of high-cost and/or high-risk conditions (e.g., cancer, extremely pre-term and mild-to-moderate dementia) requiring care delivery redesign to improve efficiency and effectiveness. It’s also important to note that 50 percent of the population accounts for only 3–5 percent of costs and, as a result, are not the primary focus of population health efforts.

FIGURE 20 | DEFINITION OF POPULATION HEALTH

KINDIG AND STODDART¹

“The health outcomes of a **group of individuals**, including the distribution of such outcomes within the group. It is an approach to health that aims to improve the health of the entire human population”



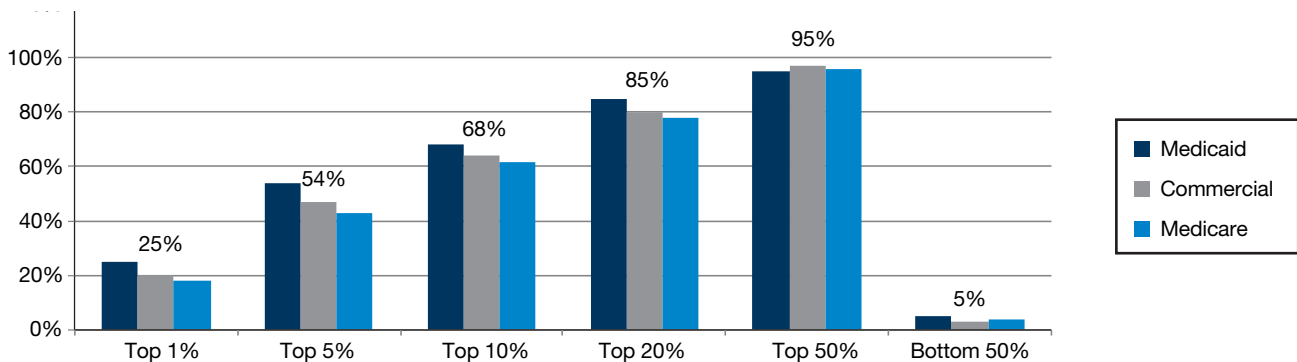
ALVAREZ & MARSAL

“The health and cost outcomes of a group of individuals, including the distribution of such outcomes within the group. It is an approach to health management that aims to improve the efficiency and effectiveness of healthcare delivery for the 5-10% of the population accounting for 43-68% of costs”



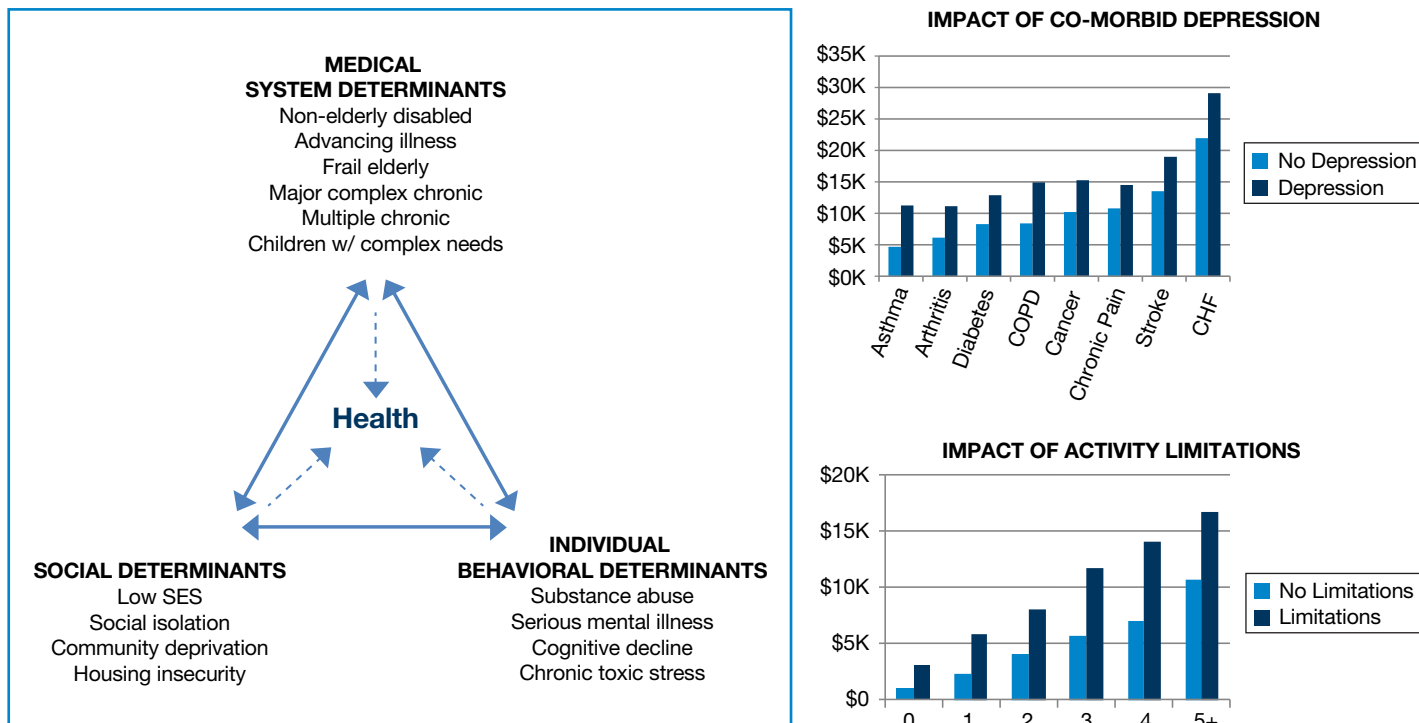
Source: Kindig D, Stoddart J. Models for Population Health; American Journal of Public Health 2003, 90(3): 380-383

FIGURE 21 | POPULATION STRATIFICATION BY PAYER BASED ON EXPENDITURES



Source: Medicaid – CMS FY2008; Commercial - Kaiser Family Foundation calculations using data from U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey (MEPS), 2008.; Medicare – CMS 2001

FIGURE 22 | MEDICAL, BEHAVIORAL AND SOCIAL DETERMINANTS OF COSTS



Sources: ¹Medical Expenditure Panel Survey, 2006. RWJF, Bloomberg School of Public Health Chronic Disease Chart Book; ²Milliman Research Report. Chronic conditions and co-morbid psychological disorders, July 2008. Excludes incremental behavioral health treatment costs of \$90-170 per condition

The total cost of whole person care reflects medical system, behavioral and social determinants. Medical system determinants often reflect treatment by multiple providers at several sites, including the community, and the need for care coordination, data sharing and integration across the entire care continuum.

Individual patients with comorbid depression costs, on average, are 53 percent higher (range: 34–141 percent) than those with a chronic condition or cancer alone.⁴⁷ The risk of depression in patients with a serious medical condition is estimated at 25–33 percent.⁴⁸ Patient fears associated with chronic and life-threatening illness include loss of control and self-image, the expression of anger, dependency, stigma, isolation, abandonment and death.⁴⁹

The rate of depression varies by the type of condition (e.g., heart attack, stroke, cancer), its lifecycle and severity, presence of comorbidities, impact on functional status, degree of psychosocial support and whether the condition is life-threatening or terminal.

Activity limitations such as walking, climbing stairs, bending, and standing or sitting for extended periods have also been shown to be an independent driver of costs. Arthritis, injury and depression are among the common causes of activity limitations.

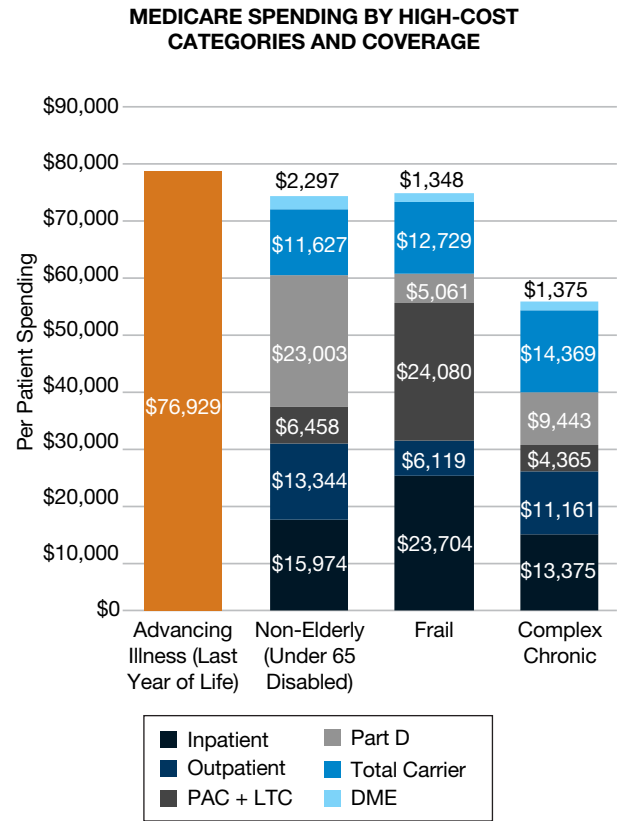
Social determinants also affect healthcare costs. Nonmedical risk factors contributing to the underlying emotional state and health outcome include income (affordability), social isolation (psychosocial status), bereavement, retirement, job loss (employment status), relocation and substance abuse.

The aged and disabled represent 25 percent of Medicaid enrollees, but account for 66 percent of Medicaid costs.⁵⁰ The vast majority of Medicare spending occurs in people with multiple complex chronic conditions.⁵¹ The frail elderly often require community services to facilitate independent living. End-of-life care is exceedingly expensive, with 2012 Medicare decedents representing 3.7 percent of Medicare beneficiaries, but accounting for 27.3 percent, \$165 billion of total Medicare program expenditures (excluding decedent deductibles and co-payments).⁵²

FIGURE 23 | CLINICAL GROUPS WITH DISPROPORTIONATE SPENDING

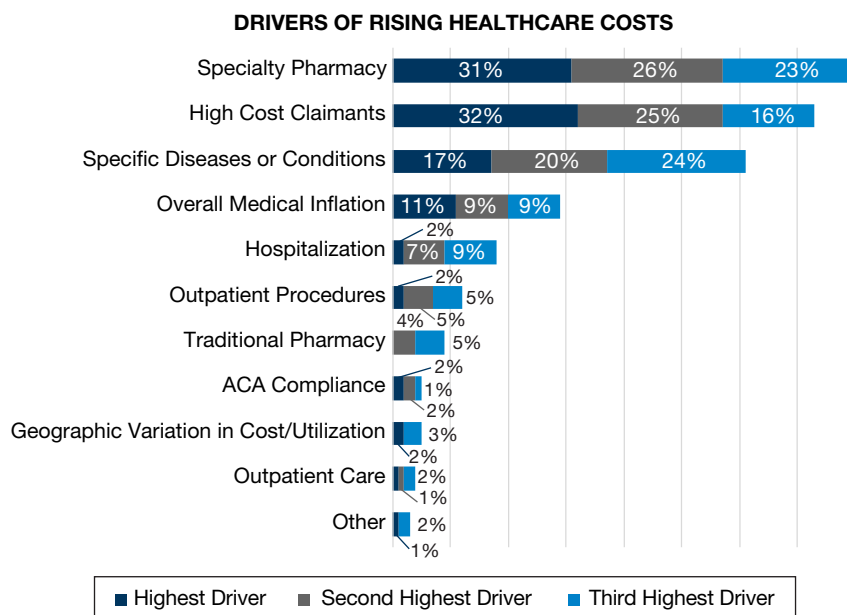
CLINICAL GROUP	FEATURES	% OF MEDICARE BENEFICIARIES	ESTIMATED NUMBER OF MEDICARE BENEFICIARIES
Children with complex needs	Have sustained severe impairment in at least four categories together with enteral/parenteral feeding or sustained severe impairment in at least two categories and requiring ventilation or continuous positive airway pressure	0.7%	400,000 (with cost approximating \$250,000 per child)
Non-elderly disabled	Under 65 years and with end-stage renal disease or disability based on receiving Supplemental Security Income	18%; End Stage Renal Disease (ESRD) – 0.5 million	9.9 million
Multiple chronic	Only one complex condition and/or between one and five non complex conditions	32% with 2-3 chronic conditions; 23% with 4-5 chronic conditions	17.8 million with 2-3 chronic conditions; 12.8 million with 4-5 chronic conditions
Major complex chronic	Over 65 years and with two or more frailty indicators	14%	6.4 Million
Advancing illness	Other terminal illness, or end of life	4%	2.1 Million

CHRONIC ILLNESSES	
Categories for children with complex needs	Learning and mental functions, communication, motor skills, self-care, hearing, vision
Noncomplex conditions	Benign prostatic hyperplasia, endocrine and metabolic disorders, eye disease, hematological disease, hypertension, immune disorders, inflammatory bowel disease, neuromuscular disease, thyroid disease, substance abuse, etc.
Complex conditions	Acute myocardial infarction, ischemic heart disease, chronic kidney disease, congestive heart failure, dementia, chronic lung disease, psychiatric disease, specified heart arrhythmias, stroke, diabetes
Frailty indicators	Gait abnormality, malnutrition, failure to thrive, cachexia, debility, difficulty walking, history of fall, muscle wasting, muscle weakness, decubitus ulcer, senility, or durable medical equipment use



Source: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Downloads/2012Chartbook.pdf>

FIGURE 24 | DRIVERS OF EMPLOYER COSTS



RISK FACTOR	U.S. AVERAGE (ADULTS)
LDL>130 mg/dl	31.7% ¹
HDL<40 mg/dl	19.1%
Triglycerides	31.0%
Hypertension> 140/90	18-39: 6.8% 40-59: 30.4% 60+: 66.7%
Pre-diabetes: Impaired Fasting Glucose (100-126 mg/dl) or Hemoglobin A1C (5.7-6.4 mg/dl)	33.0%
Metabolic Syndrome	34.7%
Obesity (BMI >30)	35.7%
Severe(morbid) obesity (BMI>40)	6.3%
Diabetes	9.3% diabetic; 72% diagnosed

Source: <http://www.cnbc.com/2016/08/11/expect-your-health-insurance-costs-to-rise-in-2017.html>

Employer costs are driven by specialty pharmacy, high-cost claimants and specific diseases and conditions — the latter including the obesity-diabetes-comorbidity continuum, musculoskeletal conditions, behavioral health (substance abuse) and cancer. High-cost claimants may also include trauma, moderate-to-severe prematurity and conditions such as autoimmune disease, multiple sclerosis and hemophilia that are treated with very expensive specialty drugs. Specialty drug spending in five categories alone — oncology, autoimmune disease, HIV, multiple sclerosis and hepatitis C — increased from \$63.9 billion in 2012 to \$135.9 billion in 2016, reflecting a compound annual growth rate of 20.8 percent.⁵³ The specialty drug market is forecast to increase from \$87 billion in 2012 to \$402 billion in 2020.⁵⁴ Population health includes a focus on the total cost of care, inclusive of care redesign, site of service and drug price control strategies (prior authorization, step therapy, formulary tiers, closed pharmacy networks, etc.). Population health is also focused on opportunities for prevention, i.e., risk factor modification, particularly in the high-cost and moderate-to-high-risk population.

Population health is data-driven and requires the analysis of retrospective claims to identify the target population, resource utilization and unit pricing, wherever possible. A total cost of care analysis is required, inclusive of facility, outpatient, community-based and pharmacy costs. Case management principles are applied to the highest-cost patients. Provider interventions facilitating patient activation and behavior change are essential to self-management.

Opportunities to create value not only include process re-design, but also reducing the total cost of care, i.e., selecting the appropriate provider and site of service.

Unlike other sectors of the economy, the lack of price transparency, combined with third party payments for services and, until recently, limited out-of-pocket consumer costs has resulted in significant provider and service line price variation.⁵⁵ Higher commercial insurance prices reflect a multitude of factors, including provider market share, brand equity, competitive intensity, referral patterns, ownership status, cost structure and, importantly, the ability and negotiating position relative to payers — and rarely reflect a differential in health outcomes.

FIGURE 25 | POPULATION HEALTH, CASE MANAGEMENT AND PATIENT ENGAGEMENT

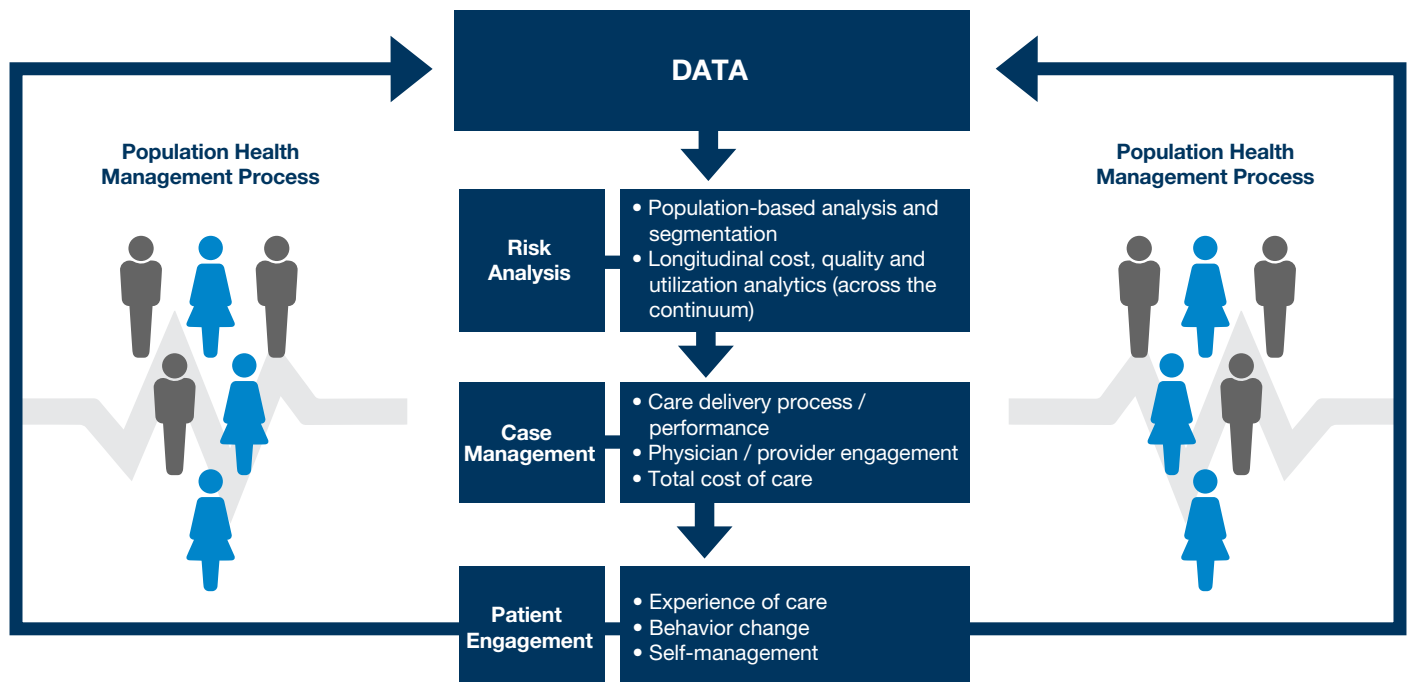
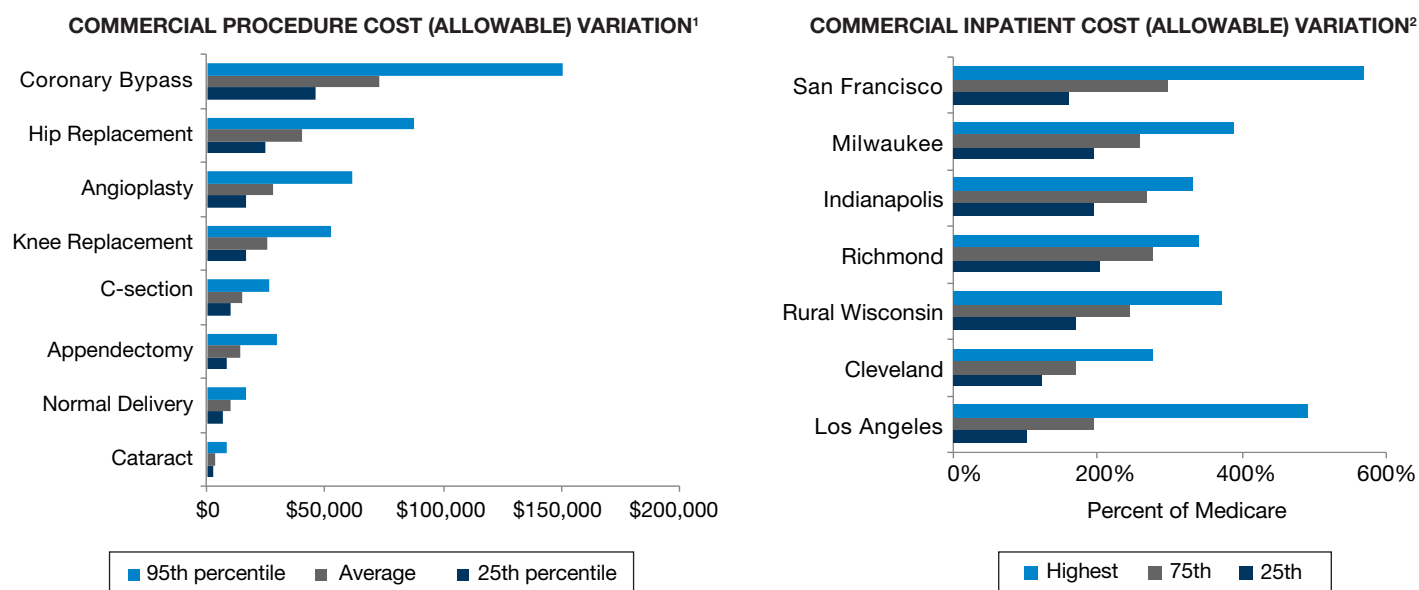


FIGURE 26 | VARIATION IN PROVIDER UNIT COSTS



¹International Federation of Health Plans. 2012 Comparative Price Report: Variation in Medical and Hospital Prices by Country; April 2013. U.S. data based on 100 million claims; ²Center for Studying Health System Change. Wide variation in hospital and physician payment rates evidence of provider market power. Research brief #16, November 2010.

A wide variation in commercial inpatient and outpatient payment rates exists within specific markets, thereby creating an opportunity for narrow(er) networks and reference-based pricing (as a percentage of Medicare above which the consumer pays 100 percent of the incremental cost) to attenuate rising costs. Nationally, in 2010, inpatient payment variation was shown to be widest in California (San Francisco and Los Angeles), where the price variance between the 25th and 75th percentile of hospitals is 150 percent to 250 percent of the Medicare payment rate, and the lowest in Ohio (Cleveland).⁵⁶

The total cost of care also reflects variation in provider resource utilization. Medicare hospital and nursing home admissions, as well as home care visits and the use of hospice services varies dramatically by state (and local markets) for beneficiaries >65 years. The difference between the first and fourth quartile is 2–4 times, a differential not shown to be equated with enhanced outcomes.

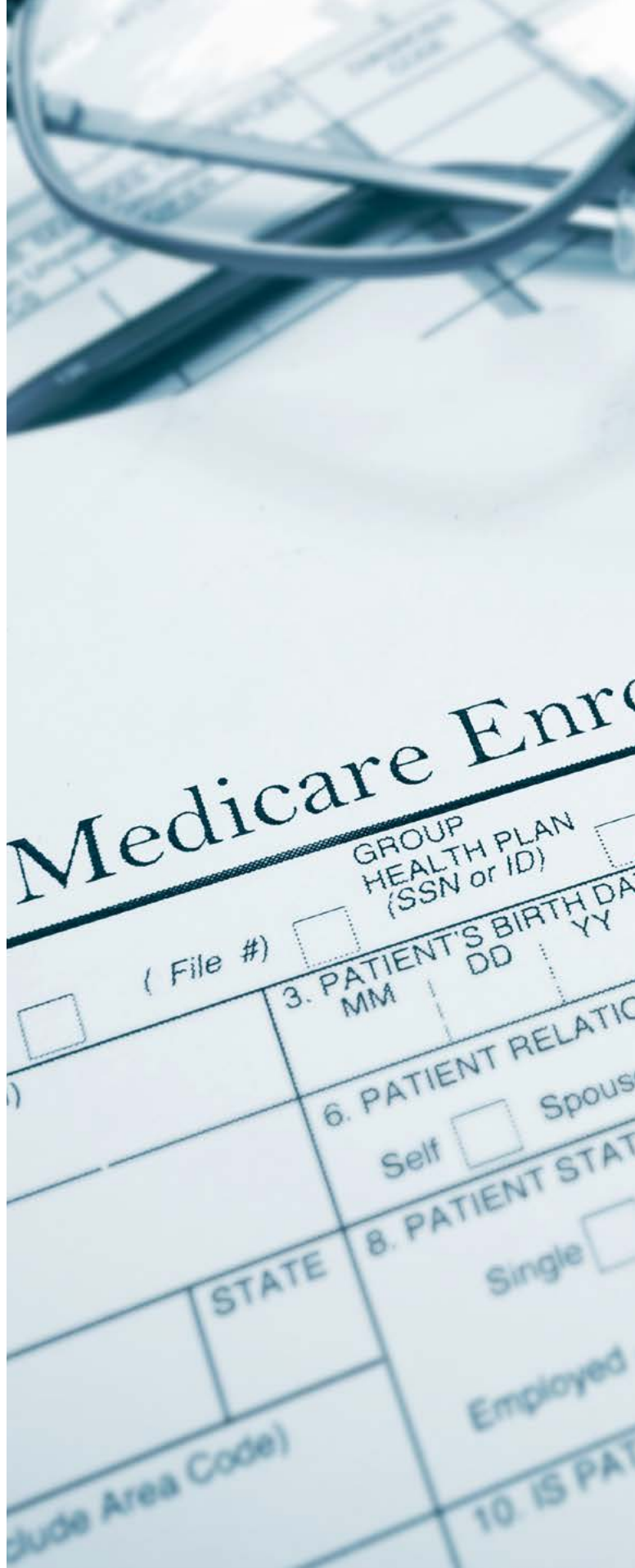
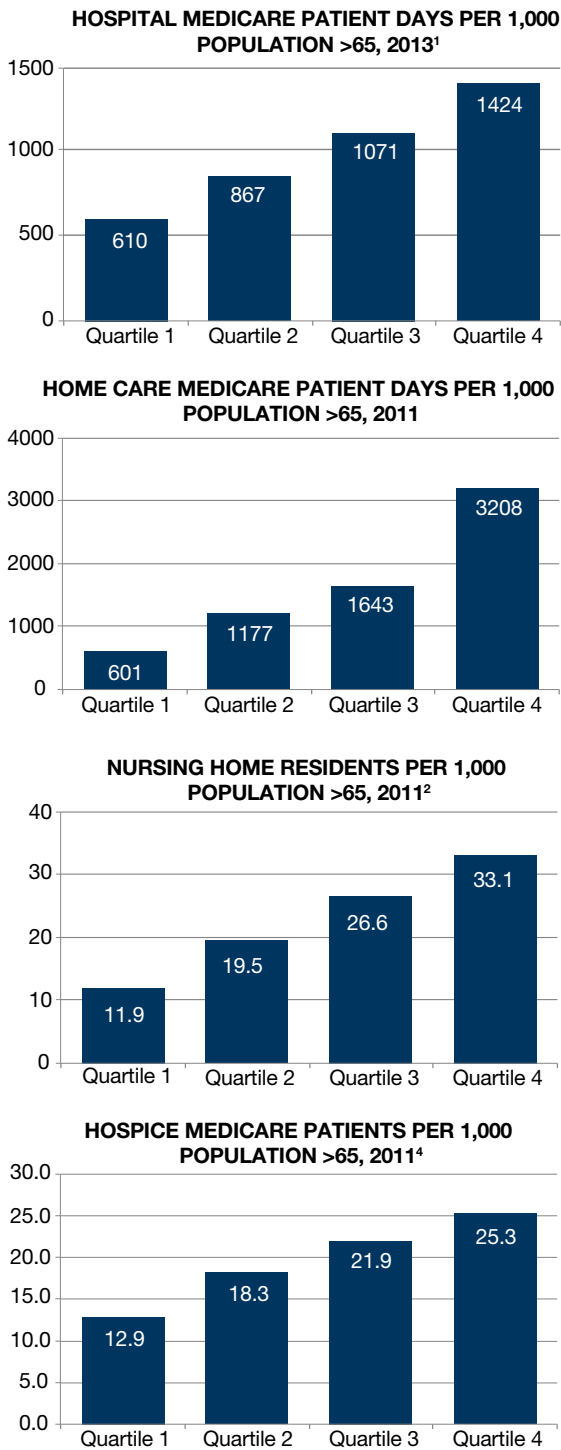
In July 2013, The Institute of Medicine (IOM) published a seminal report entitled “Variation in Healthcare Spending: Target Decision Making, Not Geography” and found that higher spending in Medicare primarily comes from the “variation in utilization of post-acute care services and, to a lesser extent, by variation in the utilization of acute care services.”⁵⁷ The report was published following more

than 20 years of evidence generated by the Dartmouth Atlas of Healthcare, highlighting significant variation in Medicare FFS spending (by state, metropolitan statistical area, hospital referral region, hospital and type of service) without an apparent relationship to clinical outcomes.⁵⁸

The IOM Committee calculated a Medicare fee-for-service spending variation of 42 percent, a figure consistent with Medicare Advantage data that suggests a variation of 36–50 percent. Post-acute care service providers account for 73 percent of the total variation in spending. The impact of reducing the differential utilization of other healthcare services among Medicare FFS recipients, such as diagnostic tests, procedures and prescription drugs, was minor.

Acute and post-acute care facility costs per day vary widely, with hospitals being the most expensive, followed by long-term acute care hospitals, inpatient rehabilitation facilities and skilled nursing facilities; home care, a non-facility service, is the least expensive.⁵⁹ Opportunities exist for a reduction in ambulatory care-sensitive hospitalizations, as well as earlier intervention to reduce the intensity of required care. The possibility of payment reform, inclusive of site neutral reimbursement, has increased focus on facility price disparities, patient mix and entry criteria, length of stay and outcome differentials, if any.

FIGURE 27 | VARIATION IN PROVIDER MEDICARE RESOURCE UTILIZATION



¹Hospitals – Medicare Cost Reports via Truven Healthcare. 2013 data; ²Nursing home: 2011 data. <http://kff.org/other/state-indicator/number-of-nursing-facility-residents/> ³Home health – 2011 data. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareFeeForSvcPartsAB/downloads/HHAst11.pdf> ⁴Hospice - 2011 data. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareFeeForSvcPartsAB/Downloads/HOSPICE11.pdf>

FIGURE 28 | CASE STUDY: DARTMOUTH SPINE CENTER

SAMPLE 36-ITEM SHORT FORM HEALTH SURVEY QUESTIONS

1. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical or emotional health?

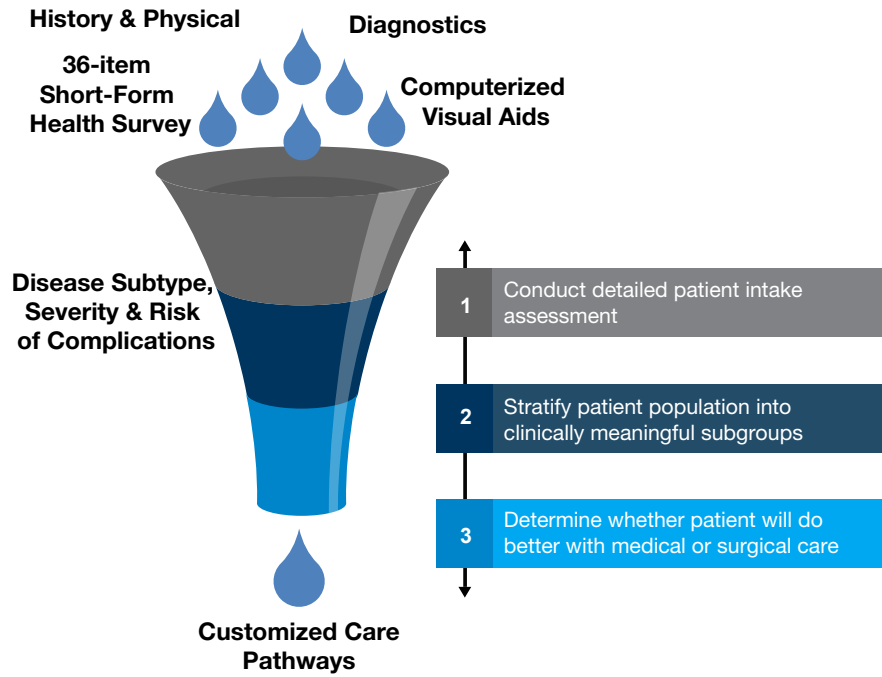
- A. Cut down the amount of time you spent on work or other activities
- B. Accomplished less than you would like
- C. Were limited in the kind of work or other activities
- D. Had difficulty performing the work or other activities (For example, it took extra effort)

2. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

- Not at all, slightly, moderately, quite a bit, extremely

3. How much bodily pain have you had during the past 4 weeks?

- None, very mild, mild, moderate, severe, very severe



Source: http://www.rand.org/health/surveys_tools/mos/36-item-short-form/survey-instrument.html; *The Four Habits of High-Value Health Care Organizations*

The application of population health principles, inclusive of costs, represents a conundrum for many healthcare systems. Low back pain of >24 hour duration is exceedingly common, affecting 17.0 million adults; 7.9 million have a duration exceeding three months, with 54 percent reporting activity limitations.^{60,61} Despite limited clinical evidence, surgical treatment of low back (lumbar) degenerative disc disease increased 2.4 times in 2000–2009 and is most pronounced in the Midwest and South.⁶² The clinical data comparing fusion surgery to nonsurgical alternative treatments is mixed; several trials “suggested no substantial difference in disability scores at 1-year and 2-years”.⁶³ An interesting study by a neurosurgeon highlighted the importance of surgical criteria, as she found 17.4 percent of cases recommended for surgery as unnecessary, i.e., pain “without neurological deficits and without significant abnormal radiographic findings.”⁶⁴ A few orthopedic procedures such as vertebroplasty and (knee) meniscal repair have been shown to be of limited clinical value.^{65,66}

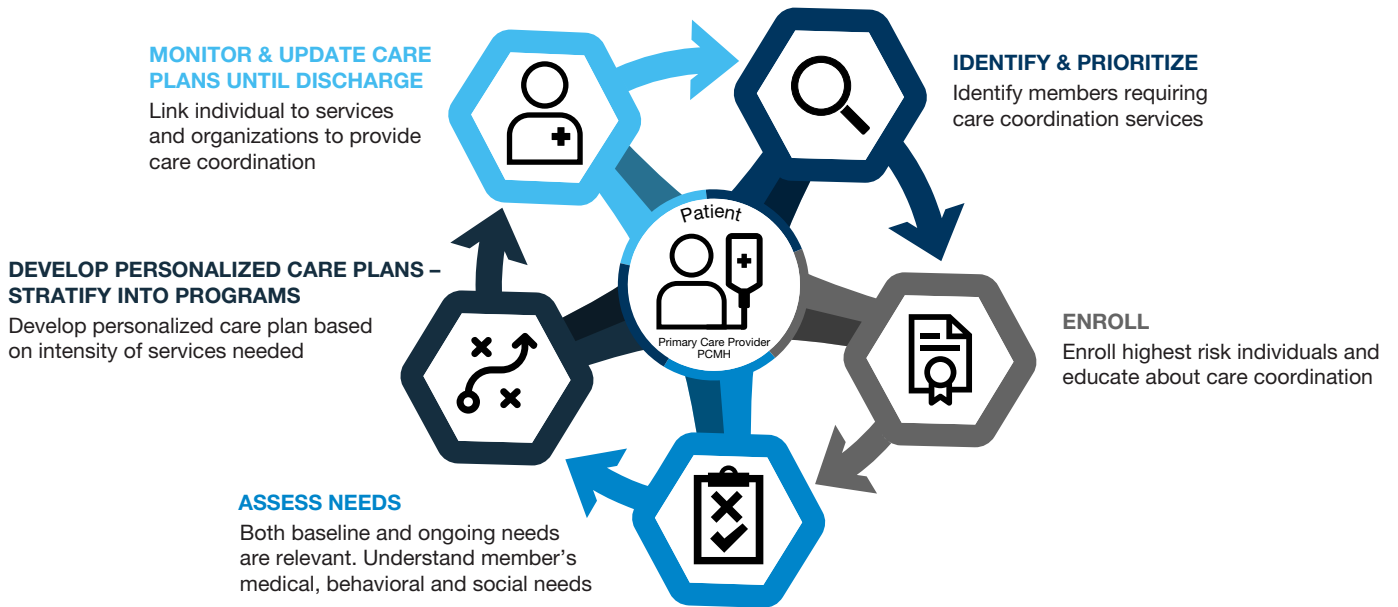
Orthopedic surgery is usually the most profitable major service line for a hospital. Orthopedic surgeons, and, in particular, spinal specialists are among the highest-compensated physicians.⁶⁷ An increased focus on

nonsurgical treatment alternatives, when appropriate, would reduce overall health system (and physician) revenues. Such a focus may also allow health systems to attract new members (i.e., gain market share) in an at-risk, value-based ecosystem.

Population health initiatives and related findings require translation to the individual patient. High-cost and/or high-risk patients may require case management and personalized health plans incorporating the services of other providers, community resources and/or caregivers. Transitions between facilities and/or to the home pose additional challenges.

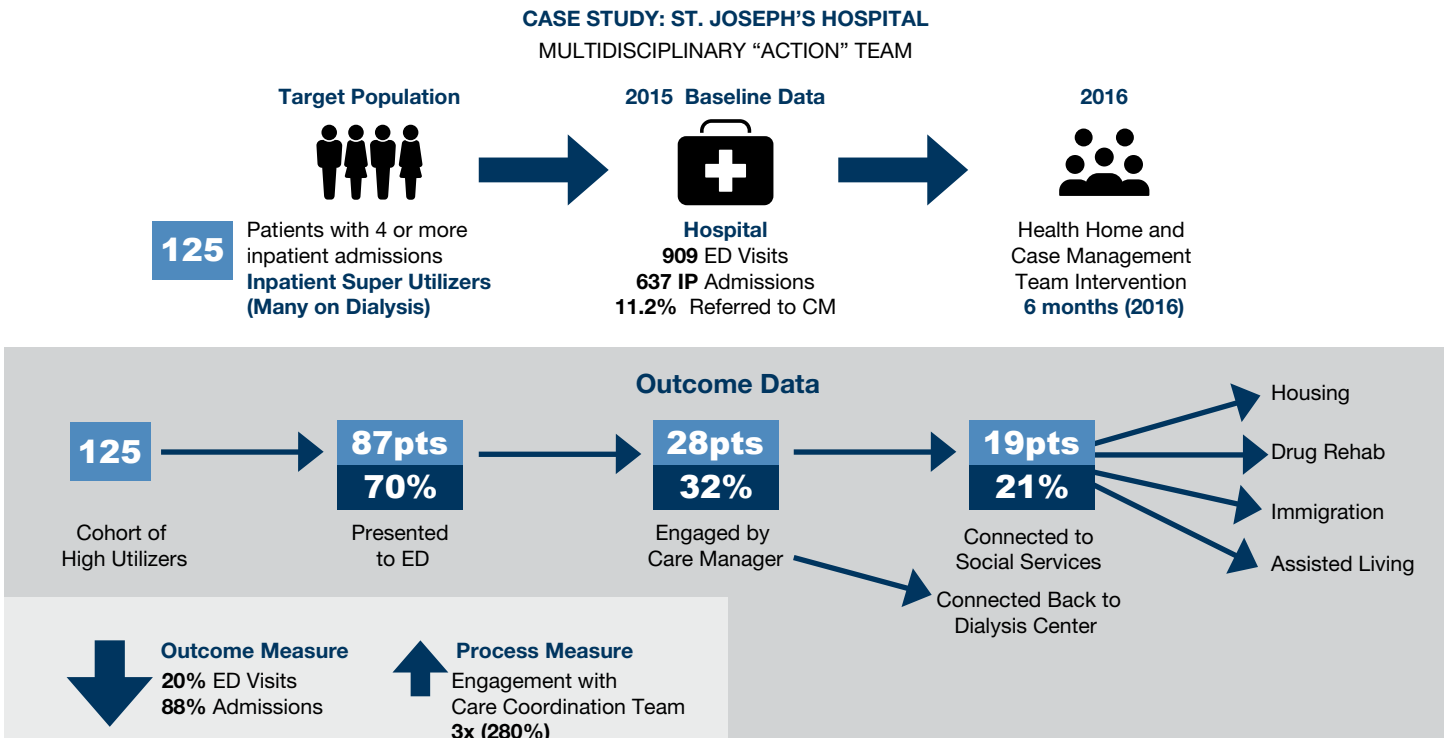
A case study from St. Joseph’s Hospital, a member of the Montefiore Hudson Valley Collaborative in New York State, is illustrative. The collaborative is led by Montefiore, includes 250 providers and other organizations from seven counties and “champions new models of providing Medicaid beneficiaries with higher quality care, while reducing expenditures through enhanced coordination, community-focused care, and education.”⁶⁸ The target population was identified, the case management team activated and outcomes measured.

FIGURE 29 | TRANSLATION OF POPULATION HEALTH TO THE INDIVIDUAL PATIENT



Source: Montefiore Hudson Valley Collaborative

FIGURE 30 | CASE STUDY: ST. JOSEPH'S HOSPITAL



Source: Montefiore Hudson Valley Collaborative

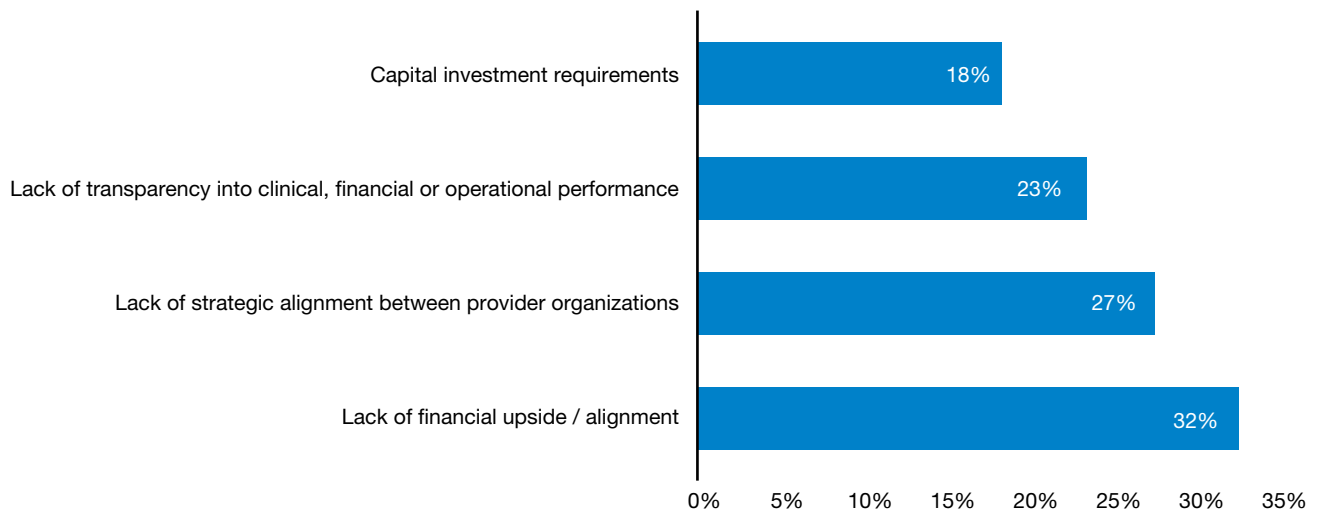
FIGURE 31 | POPULATION HEALTH METRICS

FEE FOR SERVICE	AT RISK, VALUE-BASED ECOSYSTEM
Average Daily Census	Days per 1,000
Length of Stay	Admissions per 1,000
Per Visit Contribution Margin	Visits per 1,000
Adjusted Patient Days	Hospitalization/ED Avoidance
Service Line Development	Shift to Outpatient, Community, Home
Increase Utilization	Reduce Utilization
Hospitalizations	Reduction in Ambulatory Care Sensitive Hospitalizations
Cost Per Procedure	Average Annual Cost of Care for Patients with Diabetes
Margin per Service or Procedure	Margin per Covered or Attributed Life
Admissions and Readmissions	Preventable Admissions and Readmissions

Population health management requires the use of value-oriented metrics. These measures are diametrically opposite to those oriented towards “filling beds” and increasing resource utilization. Metrics need to be risk adjusted to better reflect the age, sex, race, ethnicity and health of a local population. In addition, benchmarks must be carefully selected as process inefficiencies may already be embedded in the reported metrics of local markets, as evidenced by the ACO cost-savings results.⁶⁹

A successful population health management initiative requires strong leadership, strategic alignment, a tolerance for financial risk, a data-driven culture supported by the appropriate infrastructure and process redesign — a challenge for any organization, given local market dynamics and the preponderance of fee-for-service reimbursement.

FIGURE 32 | BARRIERS TO POPULATION HEALTH MANAGEMENT IMPLEMENTATION



Source: Athenahealth population health roundtable, May 2017

FIGURE 33 | TRANSFORMATION OF ENTERPRISE RISK MANAGEMENT BY PAYMENT REFORM

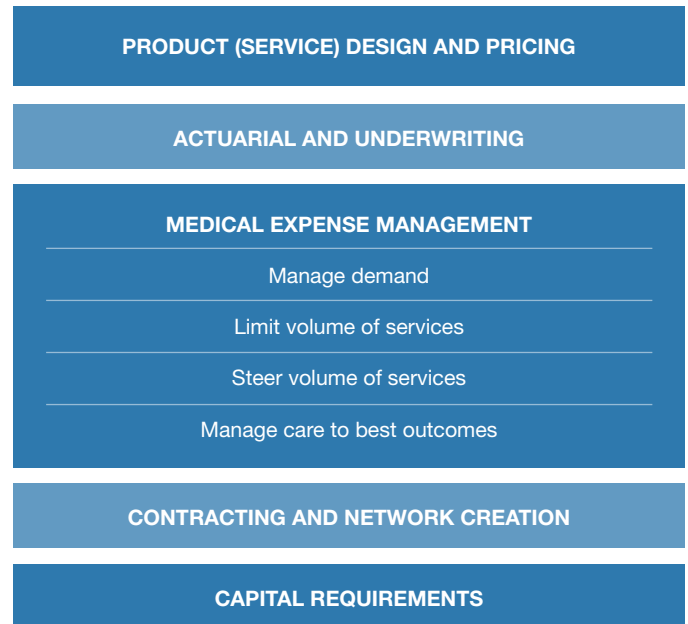


PAYMENT REFORM RISK MANAGEMENT

Enterprise risk management “allows a healthcare organization to use a cross-functional approach to assess, evaluate, and measure risks, and help guide decision-making within the organization’s tolerance for risk as it implements plans to be strategically adept under Affordable Care Act reforms.”⁷⁰ As the aging and elderly become an increasing percentage of the population, and healthcare costs continue to rise and become increasingly unaffordable to many Americans, the provision of at-risk, value-based care will become (eventually) the predominant form of payer reimbursement. Cost containment initiatives will increasingly focus on efficiency and effectiveness, rather than service volume. *From the strategic perspective, it is incumbent upon C-suite executives to recognize the transformative impact of payment reform on the entire enterprise and the interrelationship of domain risks.*

Risk management is central to the payer business model. Providers will be required to generate similar skills, though not necessarily to the same degree. Augmented analytics capabilities are essential and may potentially represent a competitive advantage, as providers will have access not only to retrospective claims data but also electronic medical record (EMR) data allowing for real-time intervention. Most providers offer self-insured health plans to their employees, allowing for the assessment and testing of risk management initiatives.

FIGURE 34 | RISK MANAGEMENT CENTRAL TO THE PAYER BUSINESS MODEL



The “provider as payer” concept was first developed by Kaiser in 1937. Kaiser, a closed system with its own hospitals, clinics and physicians, has 9.1 million members in its commercial, Medicaid and Medicare Advantage health plans spanning eight states. Other leading health plans such as HealthPartners, SelectHealth (Intermountain), Geisinger and Sentara were formed 20–30 years ago. The University of Pittsburgh Medical Center (UPMC) Insurance Services Division (ISD) was created in 1996 as a competitive response to Highmark, offering a lower-cost narrow network plan excluding its facilities; internal reports suggest 3.2 million members.⁷¹ The common attribute of these systems is a strong clinical, data-driven and primary care-centric approach to patient management, allowing for comprehensive product (health plan) offerings at competitive prices. Critical mass and risk management capabilities are also important.

According to the Robert Wood Johnson Foundation, of 37 provider-sponsored health plans formed since 2010, only four were profitable in 2015; another five have exited the market and two were being divested (CHI, Colorado; Tenet, Dallas). High claim losses relative to expectations were contributors to the poor performance.^{72,73} Other provider systems have increased payer collaboration in performance-based-contracting, population health and clinical integration.

A&M has generated the concept of a **provider hybrid**, defined as a provider with risk management understanding similar to payers, but without the depth of investment, capabilities and regulatory approvals necessary to actually create a joint venture or sponsor a health plan.

FIGURE 35 | LEADING PROVIDER SPONSORED HEALTH PLANS, 2015

Rank	Provider-Sponsored Health Plan	Plan Inception Date	Location	¹ Total Enrollment	¹ Medicare Advantage	Employer	² Medicaid	Medicare Advantage	Employer	Medicaid
1	Kaiser Foundation Health Plan, Inc.	1937	CA, CO, GA, HI, MD, OH, VA, WA, D.C.	7,586,809	1,347,539	-	-	-	-	-
1	Kaiser Foundation Health Plan of Colorado, Inc.	1969	CO	573,897	-	-	-	-	-	-
1	Kaiser Foundation Health Plan of the Mid-Atlantic States, Inc.	1988	MD, VA, D.C.	522,272	-	-	-	-	-	-
1	Kaiser Foundation Health Plan of the Northwest, Inc.	1942	OR, WA	488,902	-	-	-	-	-	-
	SUBTOTAL			9,153,880	1,347,539	7,883,147	122,794	14.7%	83.9%	1.3%
2	AmeriHealth Caritas Family of Companies	1965	D.C., IA, LA, PA	1,879,528	-	1,427,577	451,951	0%	76%	0%
3	Healthfirst	1993	NY, NJ	1,005,670	129,378	48,379	827,913	13%	5%	0%
4	HealthPartners, Inc.	N/A	MN	908,113	53,575	748,170	107,968	6%	82%	0%
5	UPMC Health Plan, Inc. ⁴	1997	PA	865,863	147,542	456,807	261,134	17%	53%	30%
6	SelectHealth		UT	729,018	33,483	617,512	78,043	5%	85%	11%
7	Health Alliance Plan of Michigan	1973	MI	686,171	54,489	631,682	-	8%	92%	0%
8	Priority Health	1992	MI	587,005	101,029	374,794	111,182	17%	64%	19%
9	Group Health Cooperative	1945	WA, ID	549,500	85,872	429,512	34,116	16%	76%	6%
10	AdultCare Insurance Company	1989	OH	529,949	20,268	509,681	-	4%	96%	0%
11	Geisinger Health Plan	1984	DE, NJ, ME, PA, WV	472,349	87,187	258,186	126,976	18%	55%	27%
12	Sentara Health Plans, Inc. (aka Optima Health)	1984	VA	454,328	1,809	452,433	20	0%	100%	0%
13	Capital District Physicians' Health Plan, Inc. (CDPHP)	1984	NY	452,770	47,472	311,136	94,162	10%	69%	21%
14	MetroPlus Health Plan, Inc.	1994	NY	443,701	8,704	29,141	405,856	2%	7%	91%
15	Presbyterian Health Plan/Presbyterian Insurance Company	1986	NM	443,010	42,557	212,223	188,230	10%	48%	42%
16	Providence Health Plan	1985	OR, WA	434,657	49,758	384,852	47	11%	89%	0%
17	Texas Children's Health Plan	1995	TX	392,204	-	89,430	302,774	0%	23%	77%
18	MDWise	2002	IN	356,881	-	45,378	311,503	0%	13%	87%
19	Mercy Care Plan		AZ	351,105	-	84,924	266,181	0%	24%	76%
20	Community Health Plan of Washington (CHPW)	1992	WA	350,000	16,250	17,214	316,536	5%	5%	90%
21	Neighborhood Health Plan	1986	MA	371,010	-	-	371,010	0%	0%	100%
22	Paramount Insurance Company	2014	CH, MI	320,075	15,144	113,826	191,105	5%	36%	60%
				21,736,807	2,243,296	14,924,004	4,569,507	10.3%	68.7%	21.0%

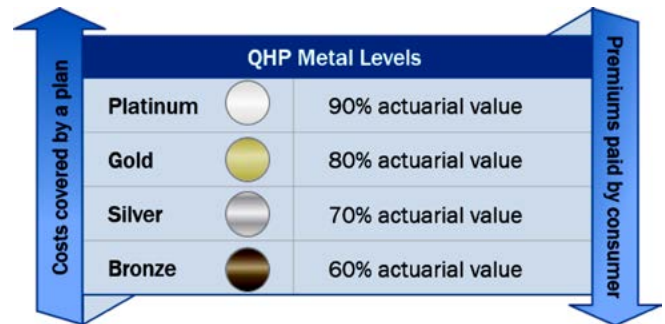
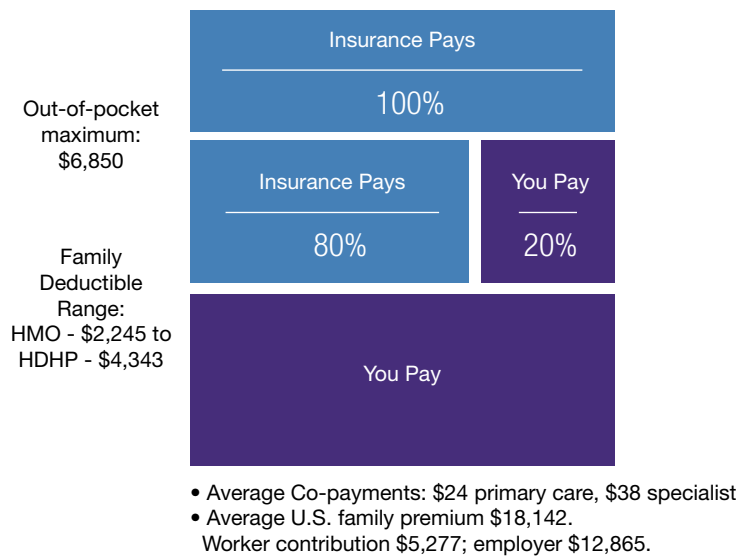
¹ CMS 2015 Monthly Medicare Enrollment by Plan

² Medicaid.gov 2014 - <https://www.medicicaid.gov/medicaid/managed-care/enrollment/index.html>

³ AIS February 2015 - <https://aishealth.com/archive/nhex0215-04>

⁴ FY 2016 UPMC Annual Report suggests membership of 3.2M and revenues of \$6.1B (2015: \$5.3B)

FIGURE 36 | PRODUCT (SERVICE) DESIGN AND PRICING



REFERENCE-BASED PRICING (RBP)

Total costs for hip and knee replacement participants in the Anthem-California Public Employees Retirement Program (CalPERS) dropped by 19 percent without adversely affecting outcomes by establishing a procedure price of \$30,000 above which the insurance company does not reimburse the provider.

Source: <http://files.kff.org/attachment/Report-Employer-Health-Benefits-2016-Annual-Survey>

An understanding of health plan product (service) design is essential to assess the impact of high out-of-pocket costs on the demand for services, as well as rising levels of bad debt among the insured population. According to the 2016 Employer Health Benefits Survey, the average U.S. family health insurance premium is \$18,142, with a worker contribution of \$5,277 (29.1 percent), a deductible of \$2,245–\$4,343 and an out-of-pocket maximum of \$6,850.⁷⁴

The employee maximum annual expense of \$12,127 (premium, deductible, co-pay, co-insurance) represents 21.5 percent of the median American household income of \$56,516.⁷⁵ The out-of-pocket maximum for health exchange plans is even higher, at \$14,300 for a family plan prior to subsidies for the lowest-income members.⁷⁶

Actuarial value is defined as “the percentage of total average costs for covered benefits that a plan will cover.”⁷⁷ Health exchange plans range from bronze to platinum, with an actuarial value of 60–90 percent. Higher actuarial value usually implies more comprehensive benefits, less out-of-pocket costs and higher premiums. The declining actuarial value of many commercial health plans due to employer cost shifting to employees contributes to demand and payment risks.

The use of reference pricing by the California Public Employees Retirement System (CalPERS), with purchasing power associated with 1.3 million members, resulted in a reduction of joint replacement prices by many providers

from the pre-implementation range of \$12,000–\$75,000 to below the reference price range of \$30,000. Based on market data, CalPERS established a reference price above which the member paid the entire incremental amount, with excess out-of-pocket payments not counting for as a deductible or for out-of-pocket maximums.⁷⁸ *The CalPERS experience highlights the potential of major employers and/or payers to unilaterally affect market prices and provider volume (share).*

Actuaries and underwriters have distinct roles. Actuaries set the price for a product, determine risk and model variations, while underwriters are responsible for determining what risk the company will take on and under what conditions on a case-by-case basis. Actuaries, as employed by insurers, have a responsibility to minimize financial risk. *Healthcare delivery is grossly inefficient and ineffective, and these assumptions are embedded within their models.* Outperformance leads to higher profits.

ACOs are intended to “lower healthcare costs, improve quality outcomes, and improve the experience of care” by accepting financial responsibility, inclusive of risk management, for the health of a targeted population.⁷⁹ According to the Congressional Research Services, “in each year of the three-year agreement period, an ACO will be eligible for a shared savings payment if the estimated per capita Medicare expenditures for Part A [hospital] and Part B [professional services], adjusted for beneficiary characteristics is at least the specified percentage below the applicable benchmark.”⁸⁰ Savings payments are

FIGURE 37 | CRITICAL ROLE OF ACTUARIES AND UNDERWRITERS

PRICING / RATING
RATE = Price per Exposure Unit (e.g. per \$1,000 of life insurance)
PREMIUM = Rate x Number of Units Purchased
PURE PREMIUM = Claims Only (expected losses and related expense)
GROSS RATE = Claims + Load (G&A, Commissions, Premium Taxes, Profit)
GROSS PREMIUM = (Claims + Load) x Number of Units Purchased
Types of Rating Methodologies: Class / Manual, Judgement, Merit, Schedules, Retro and Experience Rating
UNDERWRITING
The primary purpose of underwriting is to ensure that the insurance pool is comprised of the risk profile assumed in the company's pricing, and to avoid adverse selection.
Underwriting seeks to ensure that the delta between actual losses and expected losses is as small as possible.
Good underwriting = getting complete information / data about the risk. Examples include claims history, medical conditions, credit scores, lifestyle / behavioral and policyholder risk management. Group underwriting and individual underwriting and handled in a similar manner.
Underwriting Cycles - Underwriting continually moves through a cyclical pattern of varying underwriting stringency, premium levels and profitability. Insurance often fluctuates between periods of tight underwriting standards and high premiums (hard market) and loose underwriting standards and low premiums (soft market). Cycles are based significantly on industry capacity, which is essentially the amount of available surplus.

made only if quality standards are met in four domains: patient / caregiver experience, care coordination / patient safety (e.g., preventable stays, medication reconciliation), preventive health (e.g., immunization, screening) and population risk management (i.e., diabetes, hypertension, ischemic vascular, heart failure).

According to a Brookings Institute analysis, the ACOs with the highest cost savings had higher average per capita Medicare spending in their metropolitan areas (\$11,544) than the average Pioneer ACO (\$10,386) with several years of experience managing Medicare patients in a comprehensive, primary-care-centric and team-based manner; average quality scores were also lower in the higher-cost savings provider cohort.⁸¹ *The data suggests*

that higher levels of baseline spending (reflective of local market provider inefficiency and/or ineffectiveness) may be more important than actual performance to generate shared savings. Successful ACO providers cannot presume risk management expertise based on these findings.

Commercial payer ACOs may be benefiting from the process improvements applied to Medicare ACO patients that are also being applied to commercial patient populations.

The essentials of risk management include risk identification, assessment, prioritization and treatment / control. The latter includes avoidance (hazard removal), mitigation (exposure reduction), retention (self-insurance) and transfer (reinsurance).

FIGURE 38 | ESSENTIALS OF RISK MANAGEMENT

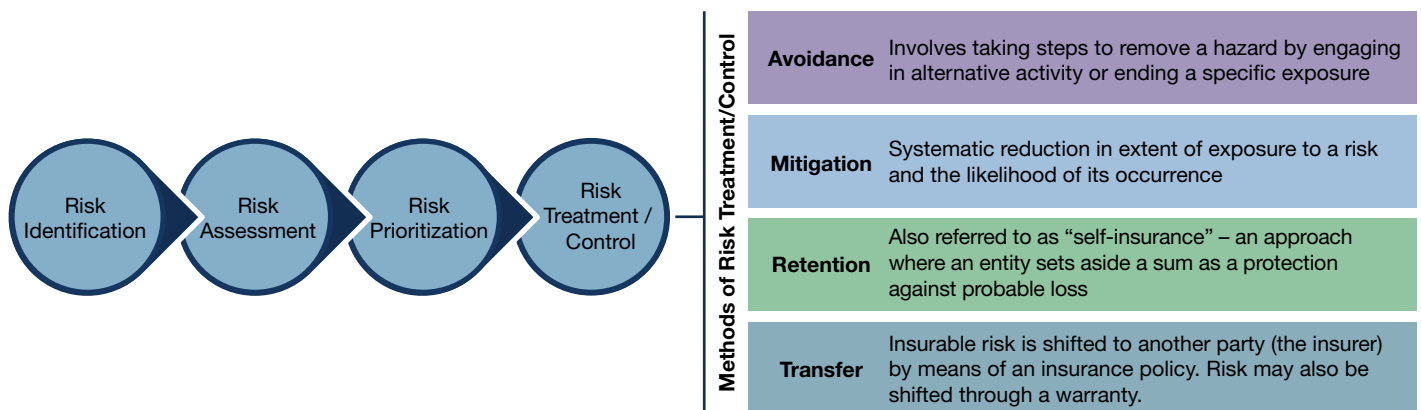
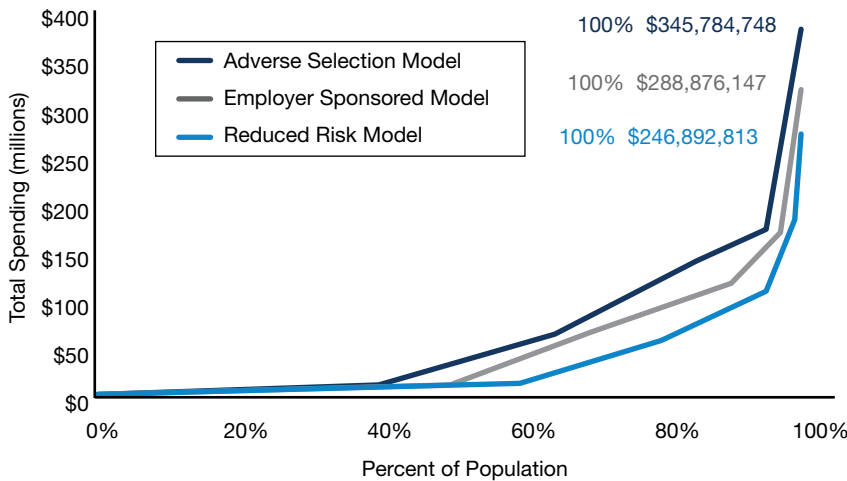


FIGURE 39 | RISK IDENTIFICATION



% INCREMENTAL PATIENT POPULATION		INCREMENTAL EXPENDITURES
Low Risk	45%	\$7,799,656
Medium Risk	30%	\$49,108,945
	15%	\$69,330,275
High Risk	3%	\$29,465,367
	7%	\$190,080,505
TOTAL	100%	\$345,784,748

% INCREMENTAL PATIENT POPULATION		INCREMENTAL EXPENDITURES
Low Risk	50%	\$8,666,286.40
Medium Risk	30%	\$49,108,944.95
	10%	\$46,220,183.49
High Risk	5%	\$49,108,944.95
	5%	\$135,771,788.99
TOTAL	100%	\$288,876,146.78

% INCREMENTAL PATIENT POPULATION		INCREMENTAL EXPENDITURES
Low Risk	55%	\$9,532,912.84
Medium Risk	25%	\$40,924,120.80
	10%	\$46,220,183.49
High Risk	7%	\$68,752,522.94
	3%	\$81,463,073.39
TOTAL	100%	\$246,892,813.46

RISK LEVEL	INCREMENTAL % OF POPULATION	% OF TOTAL ESI EXPENDITURES	EXPENSE PER ENROLLEE
Low Risk (Low)	50%	3%	\$347
Medium Risk (Low)	30%	17%	\$3,274
Medium Risk (High)	10%	16%	\$9,244
High Risk (Low)	5%	17%	\$19,644
High Risk (High)	5%	47%	\$54,309

Source: AHRQ.CMS

A&M created a model to explain the importance of risk identification and the financial impact of a minor change in population risk stratification. Public sources of information were utilized for the following model assumptions:

- 2016 employer-sponsored health insurance spending of \$1,007.6 million for 174.4 million covered lives; spending per enrollee of \$5,778.⁸²
- Concentration of spending in (commercial) population 18–64 years: top 5 percent of the population = 47 percent of spending; top 10 percent = 64 percent; top 20 percent = 80 percent, top 50 percent = 97 percent; bottom 50 percent = 3 percent.⁸³

A&M calculated the spending per enrollee based on the stratification of the population, as noted in our assumptions. Our hypothetical population of 50,000 members will generate claims (expenses) of \$288.9 million. Each percentage point of the population equates with 500 people.

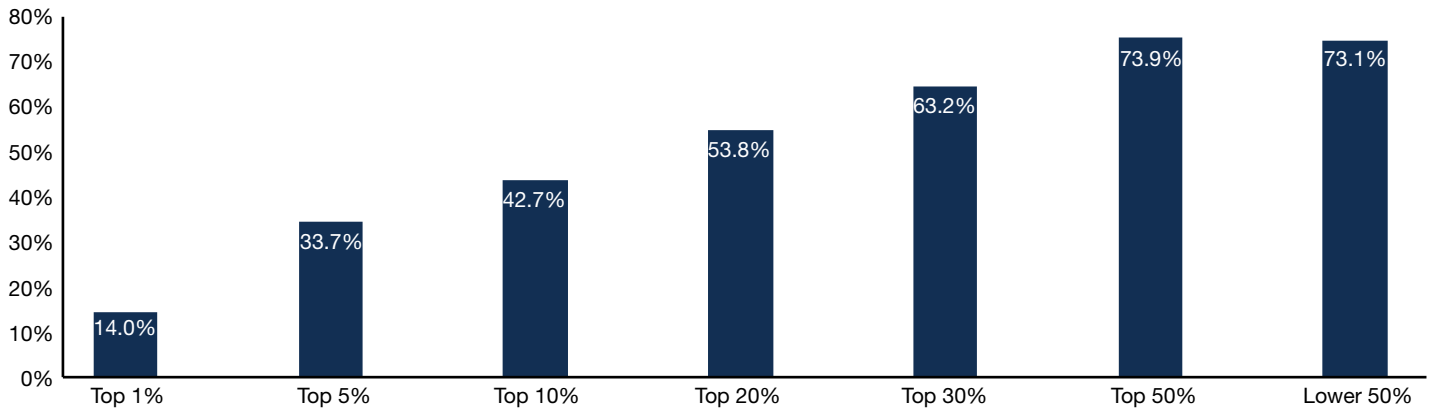
A shift of only 2,500 people from the low-risk to the medium-risk group and another 1,000 people from the high-risk to the highest-risk cohort results in incremental

healthcare expenditures of \$56.9 million. Conversely, a shift of 2,500 people from the medium to the low-risk group and 1,000 people from the highest-risk to the high-risk cohort results in reduced healthcare expenditures of \$42.0 million. Large membership pools (covered lives) mitigate the impact of shifting population risk.

According to the American Academy of Actuaries, risk pool viability requires sufficient size and can be comprised of a broad cross section of risks.⁸⁴ The goal of risk pooling is to share the costs of a sick population across the broader population, i.e., low-risk / low-cost individuals subsidize the care of higher-cost people. Affordable Care Act initiatives such as the individual and employer mandate increase participation. Alternatively, guaranteed issue and community rating rules also increase access, but by higher-cost individuals, thereby increasing the potential for adverse selection.

It's important to recognize that only 42.7 percent of the highest-cost patients — the top 10 percent — will remain in the highest-cost category the following year; 57.3 percent will cost less the following year. The highest-cost conditions that may not require sustainable (recurring) expenditures include acute conditions such as trauma and

FIGURE 40 | PATIENT PERSISTENCE IN HEALTHCARE EXPENDITURES, 2012–2013



Source: Center for Financing, Access and Cost Trends, AHRQ. Household Components of the Medical Expenditure Payment Survey, HC – 155 and HC-163 (Panel 17, 2012-13) https://meps.ahrq.gov/data_files/publications/st481/stat481.pdf

injuries, cardiac arrhythmias requiring an implant and, for many patients, osteoarthritis and back problems requiring surgery, and the first year of certain cancer diagnoses and (responsive) treatment. Patients with multiple, complex chronic conditions such as congestive heart failure, COPD and chronic kidney disease (CKD) may require frequent hospitalizations, whereas patients who need expensive specialty drugs (rheumatoid arthritis, inflammatory bowel disease, multiple sclerosis, hemophilia), or who have advanced stage or recurring cancer, more often generate high costs over a multiyear period, if not a lifetime.

Risk assessment is a complicated subject, requiring an understanding of the severity of the underlying condition, alternative treatment modalities, the presence of comorbidities, social determinants and the likelihood of treatment (medication) adherence. Disease management programs are often ineffectual as they do not adequately focus on the whole person, v i.e., related conditions, psychosocial support and the need for sustainable behavior change.

The Department of Health and Human Services has developed a risk adjustment methodology assigned to each enrollee for the Medicare Advantage (CMS-HCC model) and commercial payer (HSS-HCC) populations

FIGURE 41 | RISK ADJUSTMENT FACTORS CRITICAL TO MEDICARE ADVANTAGE REIMBURSEMENT

Accurate RAF coding drives 4 key factors of a successful population health program

Additional Resources	Provides a payer with additional resources to manage the health of a riskier population
Better Analytics	More accurate coding leads to improved predictive modeling and stratification of a population
Whole-Patient View	Creates individual patient profiles that reflect their overall health instead of episodic issues
Encourages Regular Engagement	Encourages regular outreach to patients who aren't visiting the practice but may need follow up

- Enhances physicians' understanding of the comparative riskiness of their panel
- Allows for an accurate account of the population's clinical profile, including conditions treated by specialists, complications and comorbidities
- Helps identify previously undocumented suspect medical conditions through integration of disparate patient data using clinical algorithms
- Improves accuracy of patient stratification for clinical programs, referral to care manager and care team
- Helps providers develop comprehensive and coordinated care plans to manage the whole patient
- Encourages outreach to patients without regular visits to their primary care physician

- Used to assess the clinical complexity of a patient and predict the burden of illness for individuals and populations
- Acts as a multiplier when calculating CMS payments to a payer
- Factors into the bidding and payment of MA plans
- Focuses on identification, management and treatment of chronic conditions

Source: Premier Health Group, Risk Adjustment Factor

known as the “risk adjustment factor” (RAF score). The RAF score is calculated based on demographic (age, community- or institution-based, Medicaid disability) and diagnosis data, the latter derived from ICD-10 codes.⁸⁵

Diagnoses are grouped into a Hierarchical Condition Category (HCC) and assigned a numeric value that represents the relative expenditures that a plan is likely to incur for an enrollee with a given category of medical diagnosis. The diagnostic data is captured on an annual basis during face-to-face encounter between the patient and physician (nurse practitioner). Physicians are also required to provide a condition status update (new, stable, worsening or improving) and plan of action (assessment, treatment). *Providers need to ensure accurate, specific and consistent clinical documentation (coding) for payment optimization.*

If an enrollee has multiple, unrelated diagnoses (such as prostate cancer and arthritis), both HCC values are used in calculating the individual risk score. Additionally, if an adult enrollee has certain combinations of illnesses (such as a severe illness and an opportunistic infection), an interaction factor is added to the person’s individual risk

score. Once individual risk scores are calculated for all enrollees in the plan, these values are averaged across the plan to arrive at the plan’s *average risk score*. The average risk score, which is a weighted average of all enrollees’ individual risk scores, represents the plan’s predicted expenses, i.e., level of reimbursement.”⁸⁶

Physician reimbursement also depends upon an aggregate of patient complexity and may be above or below 100 percent of Medicare (allowable). The CMS point system does not always make sense, i.e., incidental aortic atherosclerosis adds 0.299, whereas obesity, a driver of significant morbidity and mortality, does not have point value.⁸⁷

Unlike EMR data, claims data does not quantify the severity of a condition. Risk prioritization can be subdivided between those already at high cost with an advanced disease (e.g., Stage 4 CKD prior to the need for dialysis or transplant) and those with a condition whose progression can be halted with the appropriate treatment (e.g., Stage 2 and 3 CKD). The advent of comorbidities, particularly chronic kidney disease, often results in patient management challenges and higher costs.

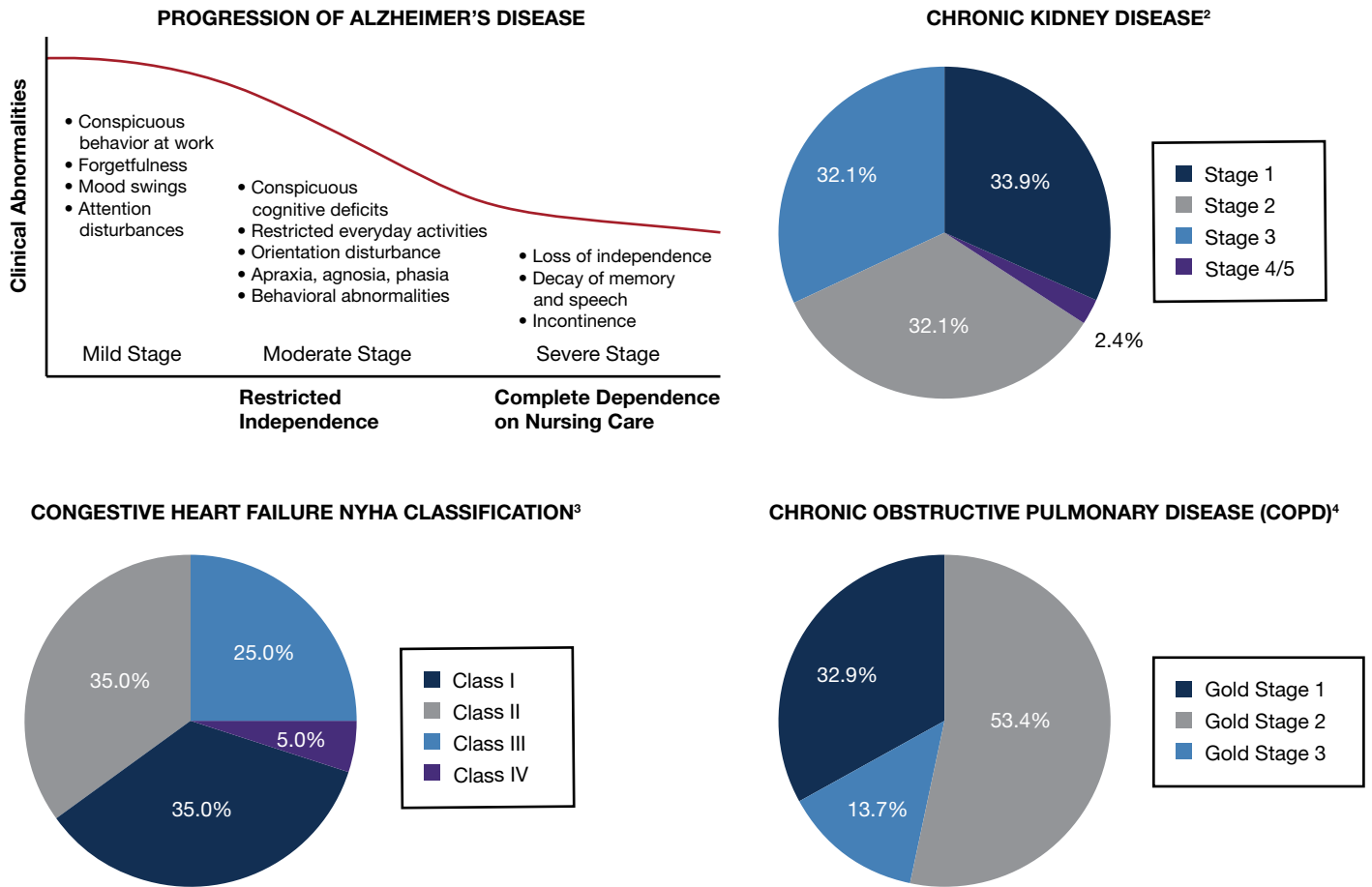
FIGURE 42 | RISK ASSESSMENT DETERMINATION

PRIMARY CARE ADMISSIONS (ANNUAL) PER 1000 INDIVIDUALS WITH DIABETES FOR A REPRESENTATIVE COMMERCIAL POPULATION BASED ON SEVERITY LEVEL							
Status (Case Mix Type)	Example of base 3M CRG	Severity Level					
		1	2	3	4	5	6
1 Healthy/non-users	No chronic health problems	N/A	N/A	N/A	N/A	N/A	N/A
2 History of significant acute disease	Chest pains	N/A	N/A	N/A	N/A	N/A	N/A
3 Single minor chronic disease	Migraine	N/A	N/A	N/A	N/A	N/A	N/A
4 Minor chronic diseases in multiple organ systems	Migraine and benign prostatic hyperplasia (BPH)	N/A	N/A	N/A	N/A	N/A	N/A
5 Single dominant or moderate chronic disease	Diabetes mellitus	26	88	100	N/A	247	N/A
6 Significant chronic disease in multiple organ systems (pairs)	Diabetes mellitus and chronic heart failure (CHF)	43	119	195	320	644	1023
7 Dominant chronic disease in 3 or more organ systems (triplets)	Diabetes mellitus, CHF and chronic obstructive pulmonary disease	132	269	497	845	1343	1606
8 Dominant and metastatic malignancies on experience	Colon malignancy – under active treatment	416	209	493	1294	2242	N/A
9 Catastrophic condition status	History of major organ transplant	290	626	806	990	1685	2486

Rate of Hospitalization

Source: <https://www.3mhisinsideangle.com/blog-post/predicting-medical-resource-utilization-with-patient-surveys/>

FIGURE 43 | RISK PRIORITIZATION



Sources:

²Prevalence of Chronic Kidney Disease and Associated Risk Factors --- United States, 1999–2004. *Weekly*. March 2, 2007 / 56(08);161-165;

³ <http://heartfailurecertification.com/pdf/nyha.pdf>

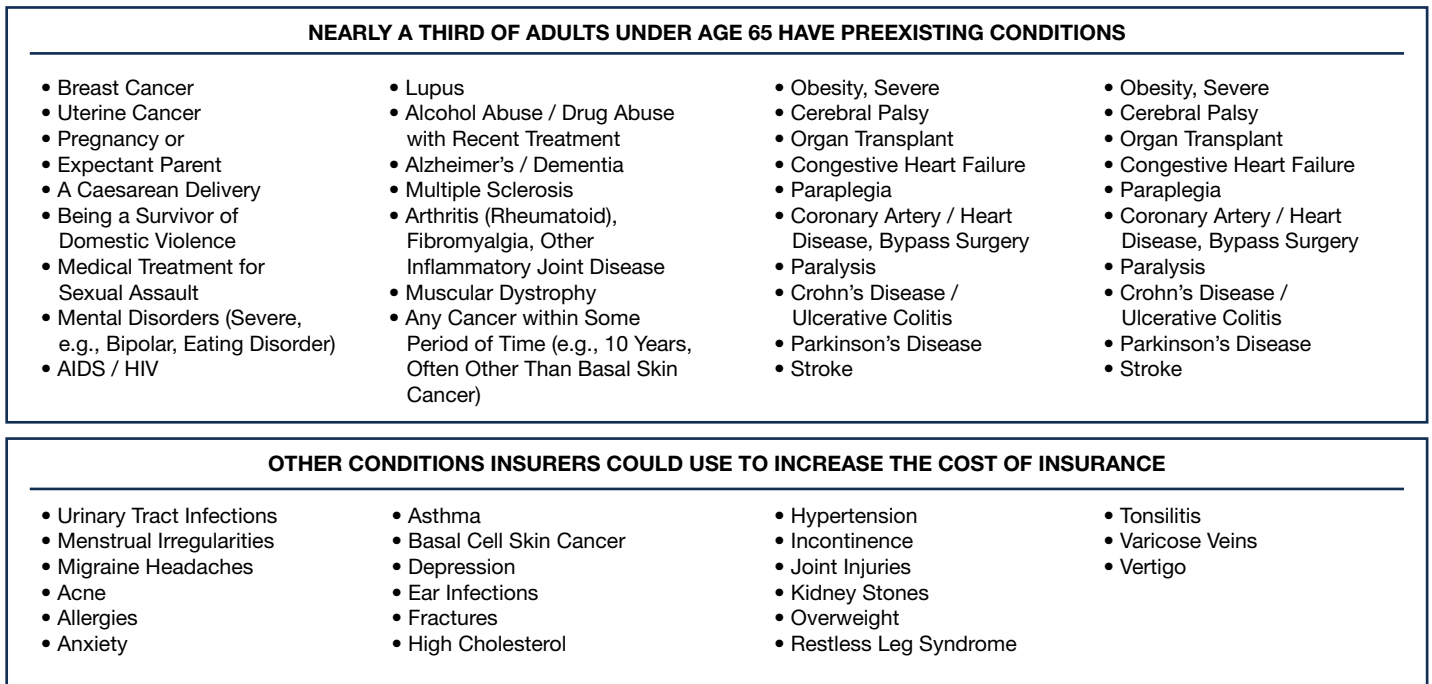
⁴Lange P, et al. Cardiovascular morbidity in COPD: A study of the general population COPD. 2010 Feb;7(1):5-10.

Until implementation of the Affordable Care Act pre-existing condition coverage denial rule in 2014, insurance companies avoided the enrollment of higher-risk and/or higher-cost individuals by denying coverage, whenever deemed appropriate. Until 2014, insurers were also allowed to charge higher premiums and/or reduce benefits to mitigate associated risk. However, many still try to dissuade high-cost patients from enrolling in their plans, a concept known as *risk selection*, by offering a high deductible plan or a plan with a restrictive formulary for specific high-cost drugs.

Conversely, *adverse selection*, or the use of insurance in guaranteed markets by those most in need for coverage, is leading to rapidly rising health exchange premiums by distorting the underlying risk assumptions.

Payers can also transfer financial risk to providers. By mid-2014, it was reported that 30 commercial bundled payment contracts were signed by large employers, integrated health systems and insurers.⁸⁸ The Geisinger bundled payment (guarantee) model for coronary bypass graft surgery and other types of complex surgical and/or interventional procedures have increased revenues and volume, while decreasing length of stay and readmission rates, i.e., increased operating margin.

FIGURE 44 | RISK AVOIDANCE AND/OR MITIGATION STRATEGIES

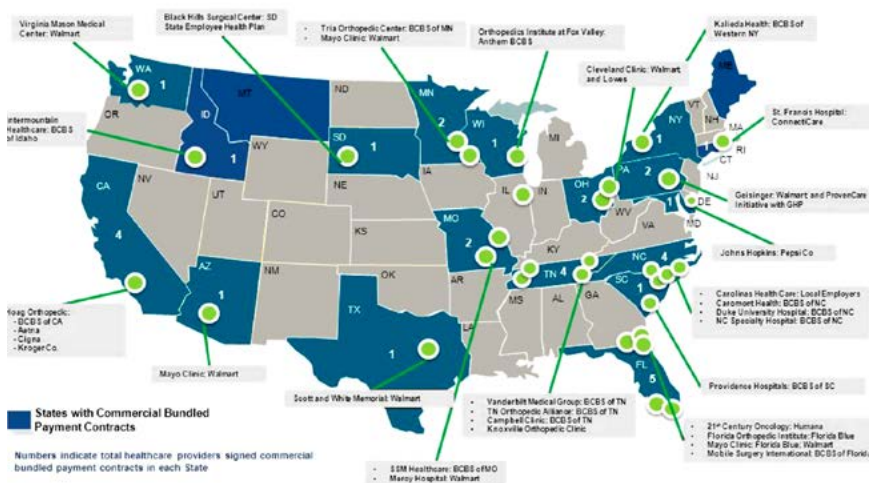


Source: Kaiser Family Foundation, National Women's Law Center

FIGURE 45 | RISK TRANSFER (MITIGATION) FROM PAYER TO PROVIDER

TRANSITIONING TO FEE FOR VALUE

Large employers, health payors and integrated health systems have signed over 30 bundle-payment contracts



GEISINGER HEALTH SYSTEM PROVENCARE

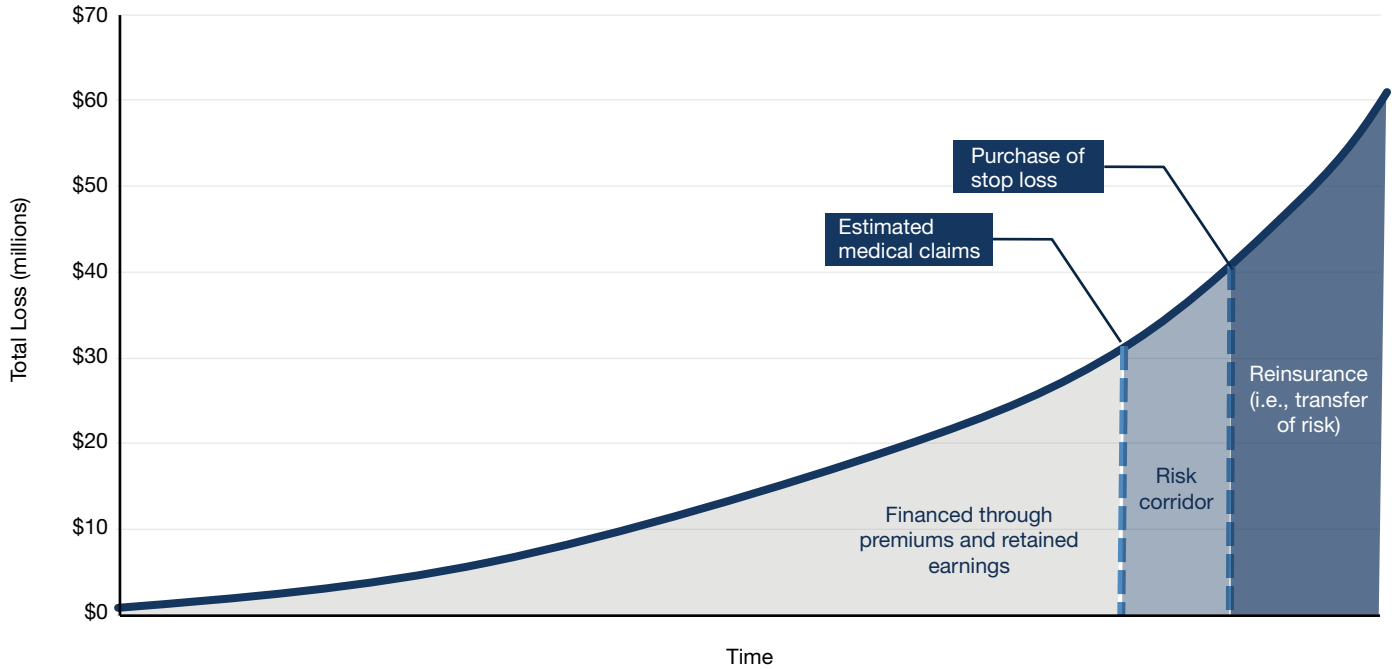
A single payment for an entire 90 day period, including:

- All related pre-admission care
- All inpatient physician and hospital services
- All related post-acute care
- All care for any related complications or readmissions

Types of conditions/treatments currently offered:

- Cardiac bypass surgery
- Cardiac stents
- Cataract surgery
- Total hip replacement
- Bariatric surgery
- Perinatal care
- Low back pain
- Treatment of chronic kidney diseases

FIGURE 46 | RISK RETENTION (ACCEPTANCE) AND TRANSFER REINSURANCE



Insurers may also retain and/or transfer risk. Risk retention requires the identification of a risk corridor, i.e., an excess of claims beyond expectations that is internally funded. Reinsurance is an expensive approach to managing the possibility of far more-than-expected catastrophic claims, i.e., where all costs associated with an individual claimant exceeding a pre-defined threshold are paid by a third party. Reinsurance can also be purchased for coverage beyond an aggregate dollar amount.

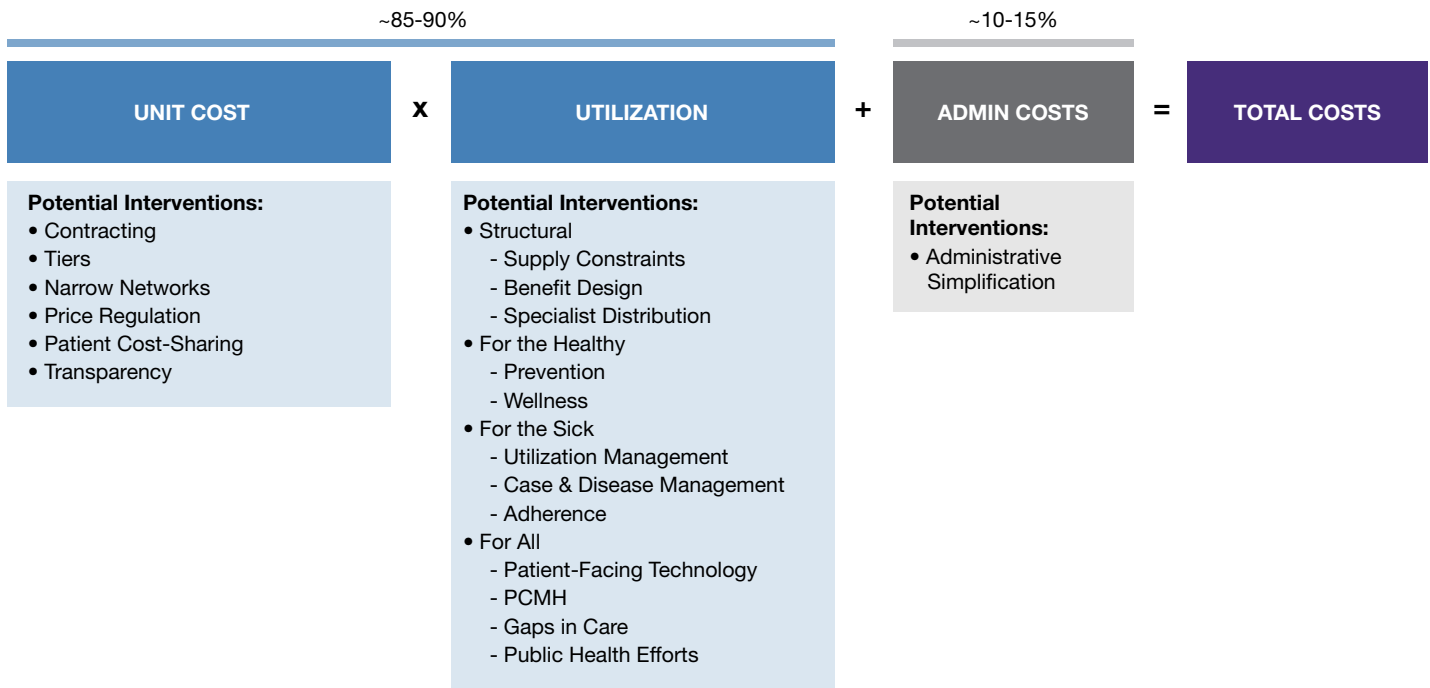
Medical expense management is the central focus of insurers and their primary driver of profitability. The Patient Protection and Affordable Care Act (ACA, P.L. 111–148) requires certain health insurers to provide consumer rebates if they do not meet a set financial target known as a medical loss ratio (MLR). The MLR is defined as:

$$\text{MLR} = \frac{\text{MEDICAL CLAIMS} + \text{QUALITY IMPROVEMENT EXPENDITURES}}{\text{EARNED PREMIUMS} - \text{TAXES, LICENSING AND REGULATORY FEES}}$$

Medical claim calculations include prescription pharmaceuticals, whereas the inclusion of quality improvement expenditures provides an incentive for increasing the efficiency and effectiveness of care delivery. More specifically, allowable quality improvement expenditures include:

- Activities to improve health outcomes, such as quality reporting, effective case management, care coordination, chronic disease management, or medication and care compliance initiatives;
- Activities to prevent hospital readmissions, including a comprehensive program for hospital discharge including patient education and counseling, discharge planning and post-discharge follow-up by an appropriate healthcare professional;
- Activities to improve patient safety and reduce medical errors through the use of best clinical practices, evidence-based medicine and health information technology, and wellness and health promotion initiatives.

FIGURE 47 | MEDICAL EXPENSE MANAGEMENT



Source: Presentation by Jeffrey Levin-Scherz, Columbia University School of Public Health

The ACA requires that the MLR calculation include methodologies (“credibility adjustments”) to account for the special circumstances of smaller plans with <50,000 members exhibiting increased random variation in filed claims and high deductible plans, where a smaller share of policyholders may end up filing medical claims, but the claims that are filed are generally higher (than lower-deductible insurance plans).

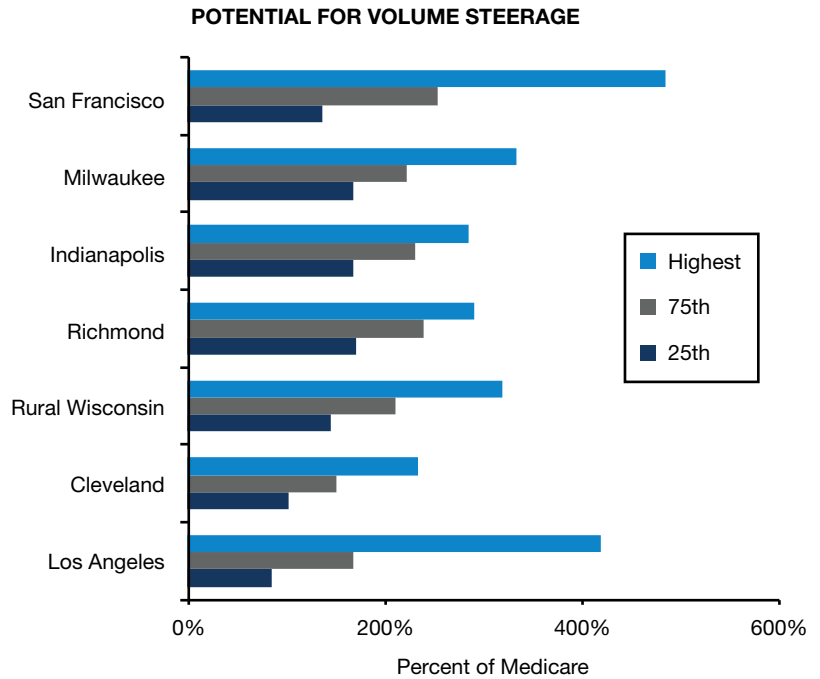
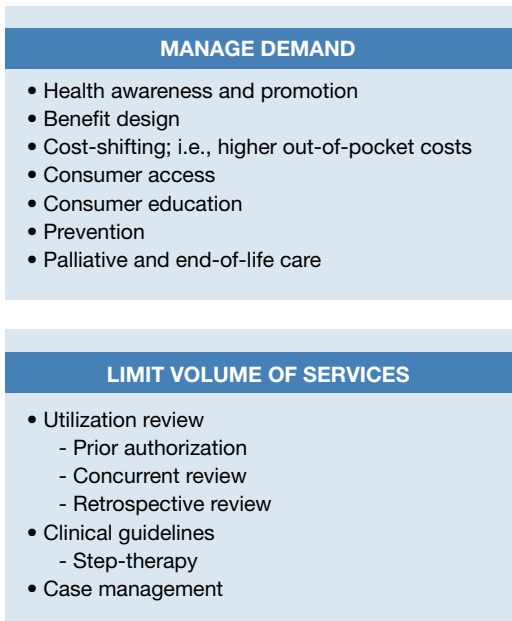
Medical expense management is focused in three areas: unit cost and utilization, accounting for 85–90 percent of the total, and administrative efficiency.

Medical expense management has been translated by insurers into managing demand, limiting the volume of services and steering to lower-cost providers. Unlike providers, insurers do not directly deliver care and have limited access to real-time EMR data, thereby limiting their ability to affect patient outcome at the point-of-care. Insurers’ efforts are also not fully integrated into those of the care team. Physician credibility is limited.

Medical expense management has been lagging at many providers, driven by fee-for-service reimbursement. Higher inpatient volume, especially in orthopedics and, to a lesser extent, cardiology, combined with higher-priced outpatient and ancillary services, generates higher operating margins. Price transparency is limited. *An association between price and quality does not exist.*⁸⁹ Providers have focused on the commercial market and, to a lesser extent, Medicare wherever possible — though that will change based on rapidly aging demographics and changing resource utilization patterns. Hospital and health system consolidation, combined with physician acquisition, has (temporarily) somewhat reduced the impetus for improved medical expense management.

Demand management has focused on benefit design, i.e., higher out-of-pocket costs and employer cost-shifting to employees. The threshold of affordability has been reached for a sizable minority of Americans, reducing demand even for serious problems where the benefits of earlier intervention are evident. Prevention efforts, with exceptions, are not adequately reimbursed.

FIGURE 48 | PAYER MEDICAL MANAGEMENT STRATEGIES



Source: Center for Studying Health System Change. Wide variation in hospital and physician payment rates evidence of provider market power. Research brief #16, November 2010.

Consumer health and wellness initiatives receive lots of publicity but, in general, have not been effective.⁹⁰ A report on Medicaid Managed Care access by the Office of the Inspector General “found long wait times to see doctors, inaccurate plan information, and inadequate network adequacy standards.”^{91,92}

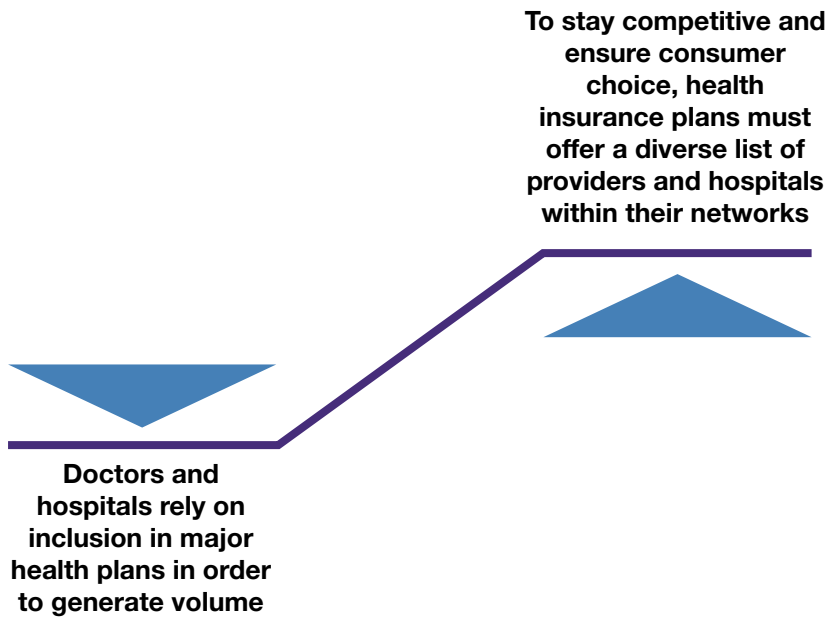
Opportunities exist to reduce employer costs by utilizing narrow (selective) networks. The formation of health systems via mergers, acquisitions and joint ventures offering a range of inpatient, outpatient, ancillary and ambulatory services reflects an attempt to offset consolidating insurance company negotiating capabilities and extend brand equity across an entire network and/or geographic region. Competitive intensity is likely to rise as fewer health systems and providers vie for market share.

Employer-sponsored insurance accounts for 35 percent or >\$1 trillion in U.S. personal healthcare expenditures; spending per employee is forecast to accelerate in 2015–2020. *Employers spend more on healthcare than Medicare and Medicaid.* CMS has utilized its ability to manage healthcare costs more effectively than employers due to a multitude of reasons, including its ability to

single-handedly influence Medicare payment terms and Medicaid spending at the state level. Employers, especially those with self-insured health plans enrolling 60 percent of covered workers, have under-utilized their market “power” for a variety of reasons.⁹³ Given the accelerating costs and increasing employee unaffordability, it is increasingly likely that employers, possibly through relationships with other large employers or coalitions, will contract directly with providers and steer market share to those providers offering the highest value, i.e., level of quality (outcome) for a unit of cost.

Utilization and case management programs represent the linchpins for provider success in an at-risk, value-based environment. Due to the lack of EMR data and an inability to manage clinical resources on a real-time basis, insurers have focused their utilization review activities on prospective pre-authorization, essentially questioning “medical necessity and appropriateness” as deemed by a physician. Alternatively, providers can self-manage real-time clinical practice with greater success by a focus on concurrent and retrospective utilization review.

FIGURE 49 | PROVIDER NETWORK CREATION AND CONTRACTING

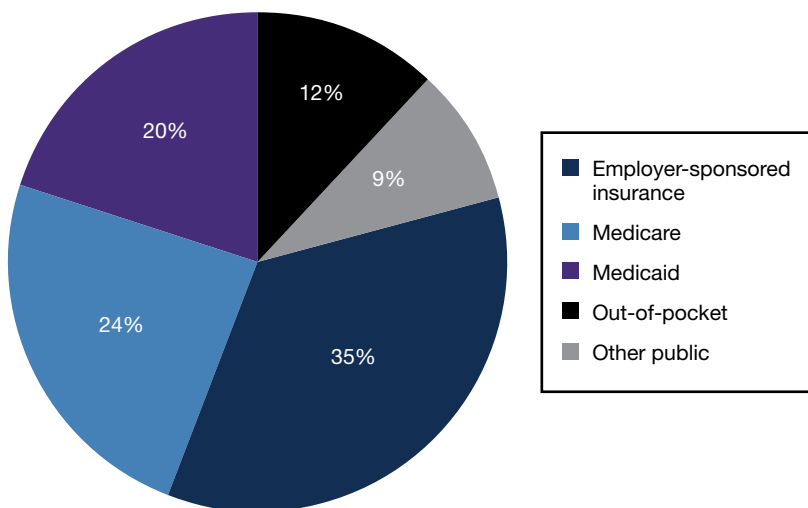


HOW DOES PROVIDER CONTRACTING WORK?

- To become part of a network, a provider must contract with a health insurance company
- The agreement gives the providers a steady stream of patients through network listings / provider directories and offers the health insurance company services at reduced rates
- A provider discount is the difference between the charge rate for health care services and the contractually determined reimbursement rate
- A health insurance company determines who it contracts with based on how aggressive a provider's discounts are and how available the provider's services are to the plan's customers

FIGURE 50 | EMPLOYER PURCHASING POWER

**PERSONAL HEALTH CARE EXPENDITURES
(2016 TOTAL: \$2,856 BILLION)**



REASONS FOR LIMITED IMPACT

- Focus on benefit design and not health outcomes and total cost of care
- Complexity of healthcare delivery and clinical conditions
- Over-dependence on third-party consultants and vendors that may have a conflict-of-interest
- Inadequate use of data analytics; and generation of related insights
- Inadequate measurement of health & wellness initiative effectiveness
- Inadequate collaboration between Human Resources and Finance Department
- Division between healthcare, disability, worker's compensation, leave of absence and other health-related costs

Excludes government administration: \$45.0B, government public health: \$82.5B, net cost of private health insurance: \$216.3B, investment research: \$47.9B, structures & equipment: \$110.2B

FIGURE 51 | COMPARISON OF PAYER AND PROVIDER UTILIZATION MANAGEMENT STRATEGIES



PROVIDER UTILIZATION MANAGEMENT

STRENGTHS

- Access to real-time EMR data enabling the management of clinical resources on a real-time basis
- Access to data enables the execution of concurrent and retrospective utilization review

WEAKNESSES

- Most providers have not developed utilization management capabilities due to the historical volume-driven, fee-for-service reimbursement system



PAYER UTILIZATION MANAGEMENT

STRENGTHS

- Volume-based, fee-for-service reimbursement has led to a strength in payer prospective utilization review

WEAKNESSES

- Claims data is process rather than outcome oriented
- Lack of real-time EMR data
- Unable to impact clinical care on a real-time basis
- Data limitations do not allow concurrent and retrospective utilization review

A focus on provider variation is essential. A case study could be applied to the CMS Comprehensive Care Joint Replacement (CJR) for lower extremity joint replacements (i.e., DRG 469 with medical complications (MCC) and DRG 470 without MCC) for a 90-day episode of care. EMR data can be used by the chief of orthopedics to highlight the

variation in unit cost (physician preference items such as implants), resource utilization (OR time, length of stay), quality (complications), and total cost of care among faculty and attending staff with privileges. Among the most effective manners to change physician behavior (practice) is a public disclosure of relative performance on a risk-adjusted basis.

FIGURE 52 | PROVIDER VARIATION BY EPISODE OF CARE

PATIENT RISK ADJUSTMENT

PROCEDURE

- Pre-operative patient triage
- OR time
- Anesthesia duration
- Complication rate
- Physician preference items (e.g., implant selection)
- Ancillary supplies

LENGTH OF STAY

DISCHARGE SITE

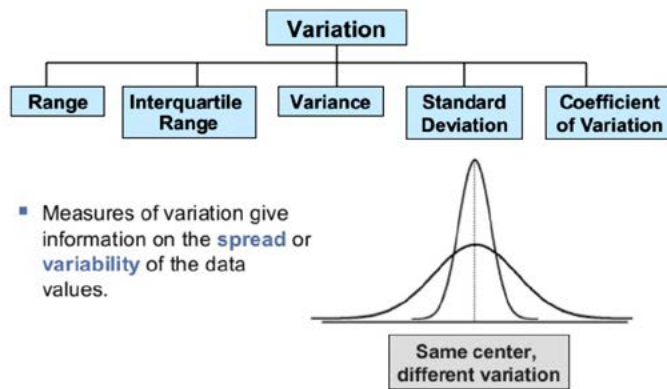
- Skilled nursing facility
- Inpatient rehabilitation
- Home

POST-OPERATIVE COMPLICATIONS

- Hospital acquired infections
- Post-discharge

READMISSION RATE

MEASURES OF VARIATION



- The interquartile range (IQR) is a measure of variability, based on dividing a data set into quartiles. It is the difference between 75th and 25th percentiles, or between upper and lower quartiles, $IQR = Q3 - Q1$.
- Standard deviation reflects the amount of clustering around the mean in a set of data
- The coefficient of variation is a measure of spread that describes the amount of variability (dispersion) relative to the mean (in percentage terms)

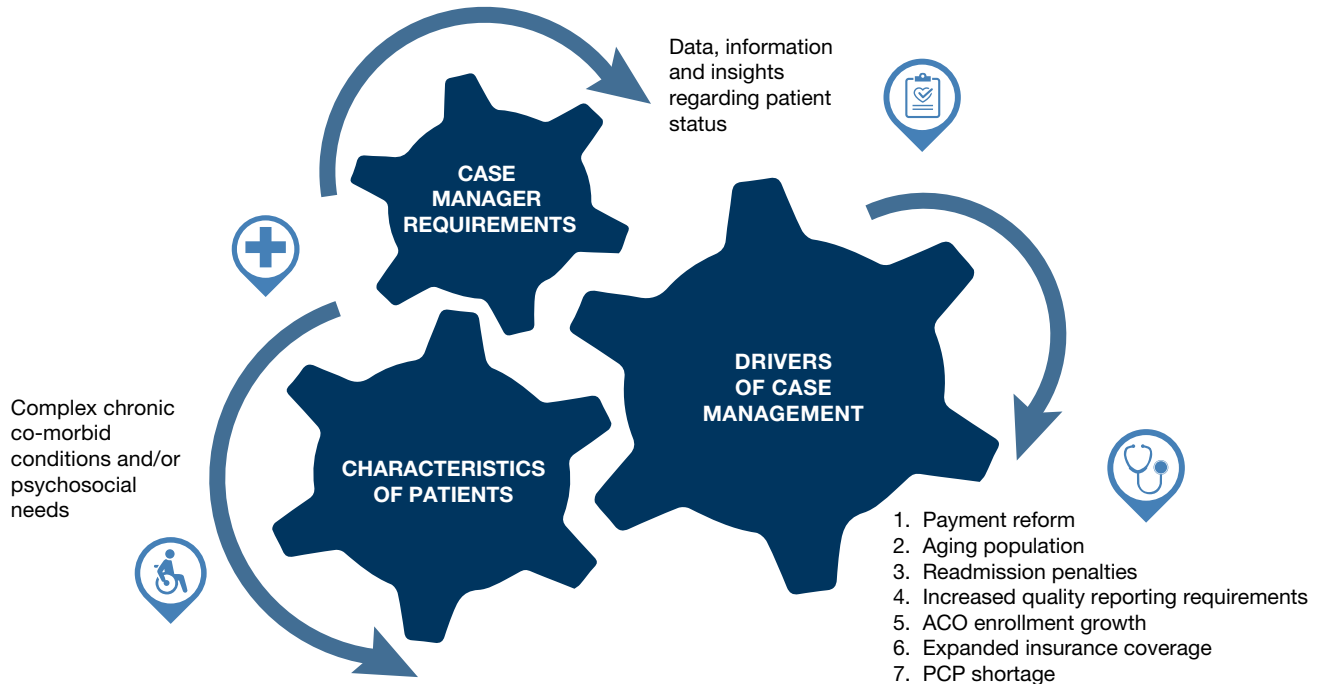
Case management targets high-cost and moderate-to-high-risk patients consuming a disproportionate amount of healthcare resources. Effective case management programs are becoming increasingly important in a healthcare ecosystem being impacted by a variety of factors, including an aging population, readmission penalties, increased quality reporting requirements, ACO enrollment growth, expanded health insurance coverage, payment reform and, importantly, a growing shortage of primary care physicians.⁹⁴

Case managers have a difficult and multifactorial role focused on prevention, proactive intervention and transitions of care. They facilitate care for patients with complex chronic comorbid conditions and/or psychosocial needs, coordinate care to assure quality outcomes in the most cost-effective manner, reduce avoidable hospital admissions, reduce gaps in care, impact practice quality scores and engender self-management capabilities, i.e., the ability to identify changes in health status and be compliant with a treatment plan. They require timely access to data, information and insights regarding patient status.

The misalignment of financial incentive poses challenges to case managers employed by health systems and hospitals. Site of service reimbursement differentials have increased between offerings provided by hospital outpatient clinics (e.g., diagnostic imaging, ambulatory surgical centers, oncology drug infusion centers) and non-hospital private practice providers. Lower-cost care (of equal quality) is often available in the community that would potentially reduce the revenues of the case manager's employer. *The misalignment issue still requires resolution.*

Opportunities also exist for case managers to become increasingly engaged with palliative and hospice care, as 25–30 percent of Medicare expenditures are spent in the last year of life; the average cost in the final year of life, \$82,343, as calculated by A&M, is 10 times the cost of surviving Medicare recipients.⁹⁵ Our calculation is based on a previously published estimate of the *last year of life* costs as a percentage of total Medicare spending and the number of deaths in the population >65 years irrespective of cause.^{96,97}

FIGURE 53 | CASE MANAGEMENT





The provider business model in the future will require threshold levels of competency in areas such as population health, analytics, risk management, efficient (lower-cost) and effective (enhanced health outcomes) care delivery, utilization and case management, and patient / caregiver and physician engagement.

A decision to either form a joint venture with an insurance company (Innova Health System – Aetna) or become an insurer requires additional skills in product design and pricing, sales and marketing, transaction processing,

eligibility and enrollment administration, revenue cycle, customer service and capital management. Many, but not all, of these functions can be outsourced to third parties. Care coordination across the continuum, case management for the 5–10 percent of patients accounting for the majority of costs, utilization management targeting provider variation and a data-driven (analytic) culture are also essential. An understanding of future regulatory developments, combined with compliance with current insurance regulations, is also required.



FIGURE 54 | INSURANCE REGULATIONS

FEDERAL INSURANCE REGULATION

The Dodd-Frank Wall Street Reform and Consumer Protection Act established Treasury’s Federal Insurance Office (FIO) and vested FIO with the authority to monitor all aspects of the insurance sector. The PPACA expanded the federal government’s reach into insurance regulation.

Marginalized Population - Monitor the extent to which traditionally underserved communities and consumers, minorities and low- and moderate-income persons have access to affordable non-health insurance products

Conduct Audits - Recommend to the Council that it designate an insurer as an entity subject to regulation as a nonbank financial company supervised by the Board of Governors of the Federal Reserve System (Federal Reserve)

Protect from International Threats - Assist the Secretary in administering the Terrorism Risk Insurance Program, which was established in the Department of the Treasury under the Terrorism Risk Insurance Act of 2002

Evaluate State Law - Determine, in accordance with certain standards and processes prescribed by law, whether State insurance measures are preempted by covered agreements

Elevated State Insurance Matters - Consult with States regarding insurance matters of national importance and prudential insurance matters of international importance

STATE REGULATION

Public policymakers that establish set broad policy for the regulation of insurance by enacting legislation and establishing laws which grant regulatory authority to regulators and oversee state insurance departments and approve regulatory budgets

The National Association of Insurance Commissioners (NAIC) - The U.S. standard-setting and regulatory support organization created and governed by the chief insurance regulators from the 50 states. With the NAIC, state insurance regulators establish standards and best practices, conduct peer review and coordinate their regulatory oversight

Company Licensing - State laws require insurers and insurance-related businesses to be licensed before selling their products or services

Producer Licensing - Insurance agents and brokers, also known as producers, must be licensed to sell insurance and must comply with various state laws and regulations governing their activities

Product Regulation - State regulators protect consumers by ensuring that insurance policy provisions comply with state law, are reasonable and fair, and do not contain major gaps in coverage that might be misunderstood by consumers and leave them unprotected

Market Regulation - Market regulation attempts to ensure fair and reasonable insurance prices, products and trade practices in order to protect consumers

Consumer Services - States have established toll-free hotlines, Internet Web sites and special consumer services units to receive and handle complaints against insurers and agents

ACTIONABLE INSIGHTS ("BIG DATA")

DATA INFRASTRUCTURE

The goal of the Health Information Technology for Economic and Clinical Health (HITECH) Act, a section of the American Recovery and Reinvestment Act (ARRA) enacted in February 2009, was to “promote the adoption and meaningful use of health information technology.”⁹⁸ Included in the HITECH Act was \$18 billion in funding as incentives for hospitals and physician practices to become *meaningful users* of electronic medical records. An additional \$2 billion was allocated to the Office of the National Coordinator to promote health information exchange and use of personal health information by consumers (patients).⁹⁹

Meaningful use criteria certified electronic health record (EHR) technology are being used to improve quality, safety, efficiency, and reduce health disparities; engage patients and family; improve care coordination, and population and public health; and maintain privacy and security of patient health information. Stated goals include “better clinical outcomes, improved population health outcomes, increased transparency and efficiency, empowered individuals, and more robust research data on health systems.”¹⁰⁰ Meaningful use criteria are in three stages, focused on data capture and sharing, health information exchange, and improved efficiency and effectiveness of care delivery.

The Healthcare Information and Management Systems Society (HIMSS) has developed an EMR analytics model to measure adoption and functionality.¹⁰¹ Since passage of the HITECH Act in 2009, the percentage of hospitals with advanced capabilities (Stages 5–7) has increased

from 6.1 percent to 70.2 percent, whereas the percentage with basic functionality declined from 35.6 percent to 5.6 percent. In comparison, ambulatory (non-hospital) adoption, inclusive of outpatient clinics, physician practices, urgent care centers and surgical centers, has lagged, with only 35.8 percent having advanced capabilities and 53.1 percent still with basic functionality.

EPIC Systems has emerged as the overall electronic medical record market leader in hospitals and ambulatory healthcare, particularly in large academic centers. Other leaders include Cerner and Medical Information Technology (Meditech) in the hospital segment, and Allscripts, NextGen, GE Healthcare and AthenaHealth in the ambulatory segment. Investment requirements vary and may exceed a few hundred million dollars for large hospitals and/or health systems.

FIGURE 55 | STAGES OF MEANINGFUL USE

STAGE 1 2011 - 2012 Data capture and sharing	STAGE 2 2014 Advance clinical processes	STAGE 3 2016 Improved outcomes
Electronically capturing health information in a standardized format	More rigorous health information exchange (HIE)	Improving quality, safety, and efficiency, leading to improved health outcomes
Using that information to track key clinical conditions	Increased requirements for e-prescribing and incorporating lab results	Decision support for national high-priority conditions
Communicating that information for care coordination processes	Electronic transmission of patient care summaries across multiple settings	Patient access to self-management tools
Initiating the reporting of clinical quality measures and public health information	More patient-controlled data	Access to comprehensive patient data through patient-centered HIE
Using information to engage patients and their families in their care		Improving population health

Source: HealthIT.gov. Policymaking, Regulation, & Strategy. Meaningful Use. www.healthit.gov/policy-researchers-implementers/meaningful-use

FIGURE 56 | INPATIENT AND AMBULATORY EMR ADOPTION, 2016

Stage	Cumulative Capabilities	Inpatient EMR Adoption 2009	Inpatient EMR Adoption 4Q16	Ambulatory		
				Ambulatory EMR Adoption May 2012	Ambulatory EMR Adoption 2016	
ADVANCED	7	Complete EMR; CCD (continuity of care document) transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP (data analytics to improve care)	0.7%	4.8%	0.0%	9.9%
	6	Physician documentation (structured templates), full CDSS (clinical decision support system); full R-PACS (Picture Archiving and Communication System)	1.6%	30.5%	1.2%	18.2%
	5	Closed loop medication administration; Full R-PACS	3.8%	34.9%	0.0%	7.7%
MODERATE	4	CPOE (computerized physician order entry), Clinical Decision Support (clinical protocols)	7.4%	10.2%	0.4%	0.8%
	3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	50.9%	13.9%	10.9%	10.4%
BASIC	2	CDR (clinical decision rule), Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE (health information exchange) capable	16.9%	2.3%	34.1%	19.2%
	1	All Three Ancillaries Installed - Lab, Rad, Pharmacy	7.2%	1.4%	5.3%	31.8%
	0	All Three Ancillaries Not Installed (i.e., paper-based chart)	11.5%	1.9%	48.0%	2.1%

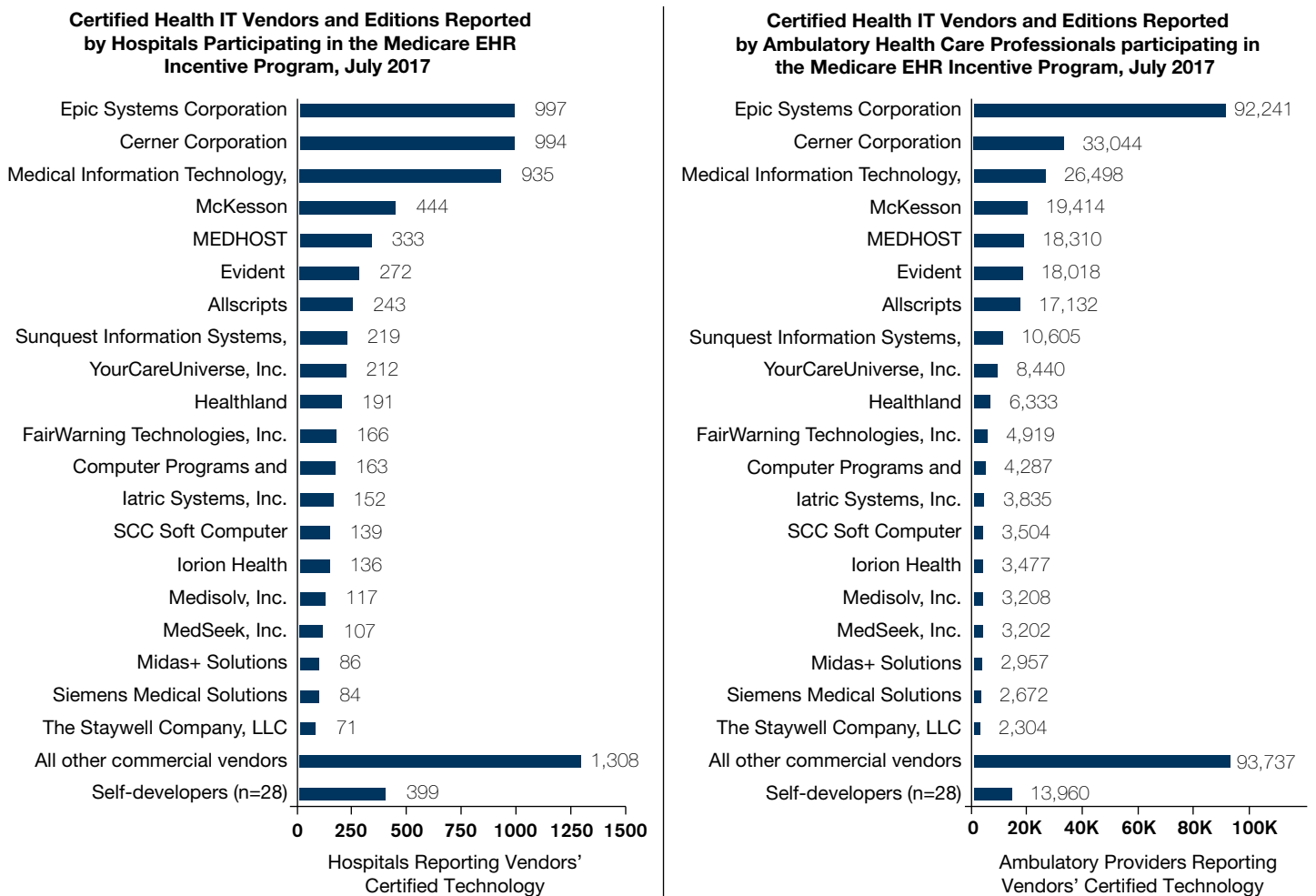
Sources: HIMSS Analytics database, 2011, 2013 and 2017

Selection of an EMR is a complex endeavor and a function of organizational goals (clinical, productivity, reimbursement); price, inclusive of hardware, software, maintenance and upgrade costs, internal interfaces for legacy systems (labs, pharmacy), connection to health information exchange (HIE) and custom reports; implementation support (resources, schedule); data migration strategy; server options and other factors.¹⁰²

The impact of electronic medical records has been below expectations. EMRs have contributed to increased reimbursement but also to a decrease in physician

productivity.¹⁰³ The decline in physician productivity is mitigated, at least partially, by the delegation of data input to clinical support staff, including medical assistants. Studies have also suggested that EMRs have created more screen time and less patient contact for physicians.¹⁰⁴ Health information exchange within and between healthcare systems has been constrained by limited interoperability among vendors. In addition, population health and other initiatives requiring data extraction and the application of analytics (descriptive and predictive) have also been challenging.

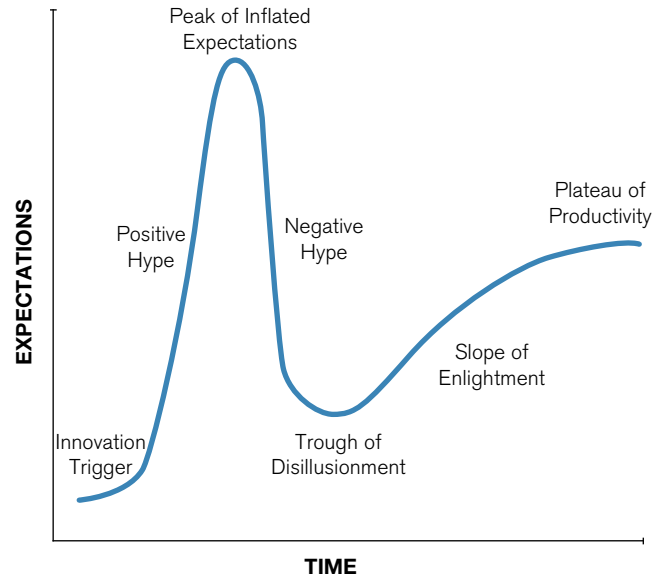
FIGURE 57 | HOSPITAL AND AMBULATORY EMR CERTIFICATION BY VENDOR, JULY 2017



Source: <https://dashboard.healthit.gov/quickstats/quickstats.php>

FIGURE 58 | EMR BENEFITS, LIMITATIONS AND EXPECTATIONS

BENEFITS	LIMITATIONS
Improved clinical documentation and reimbursement	High capital expenditures and/or maintenance expenditures
Accessibility to multiple providers at the same time; data centralization	Privacy and security concerns; potential for hacking to thousands of records
Patient/caregiver portal enhances engagement (“Open Access”, scheduling, user-generated content, timely communications)	Limited interoperability with other providers/ health systems across the continuum of care
Reduced filing and storage costs	Data extraction challenges limit analytics
Receipt of CMS meaningful use incentives	Physician productivity loss
Decrease in data entry errors and enhanced ability to use speech recognition technology; lower transcription costs	



POST-ACUTE CARE DATA INFRASTRUCTURE LAGGING

EMR implementation in post-acute care settings such as nursing homes (15,700), home care agencies (12,200), inpatient rehabilitation facilities (1,166) and long-term acute care facilities (412), have lagged even further. Unlike hospitals and physician practices, the HITECH Act did not mandate EMR implementation, nor did it provide financial incentives for post-acute care providers.

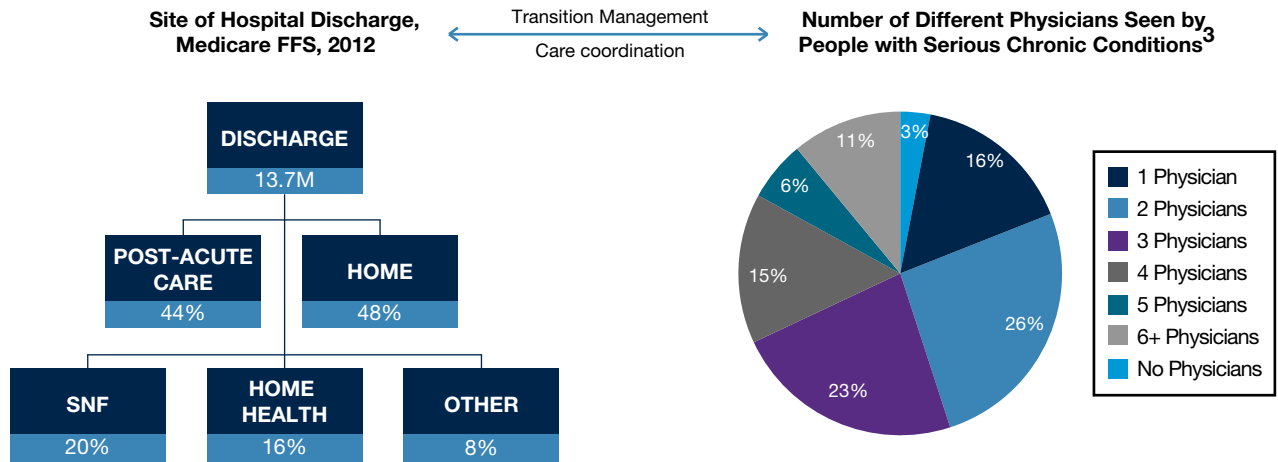
In July 2013, the Institute of Medicine published a seminal report entitled “Variation in Healthcare Spending: Target Decision Making, Not Geography” and found that higher spending in Medicare primarily results from “variation in utilization of post-acute care services, and to a lesser extent by variation in the utilization of acute care services.”¹⁰⁵ The IOM Committee calculated a Medicare fee-for-service and

Medicare Advantage spending variation of 36–50 percent, with post-acute care service providers account for 73 percent of the total variation in spending.

The IOM Committee recommended continued testing of payment reforms that “incentivize the clinical and financial integration of healthcare delivery systems” and encourage (a) care coordination among providers, (b) real-time sharing of data, tracking of service use and health outcomes, (c) distribution of provider payments and (d) risk sharing / management across the care continuum.

Congressional approval of H.R. 4994, the “Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014” mandates the development and implementation of a standardized post-acute care assessment tool that would (1) clarify goals of care, incorporate patient (caregiver) preferences and enhance discharge planning, i.e., placement decisions, (2) facilitate transition

FIGURE 59 | IMPORTANCE OF DATA INTEROPERABILITY ACROSS THE CONTINUUM



Sources: <http://www.himss.org/news/gao-releases-report-addressing-post-acute-care-ehr-adoption>; Bloomberg School of Public Health – RWJF Chronic Conditions: Making the Case for Ongoing Care, 2010. Gallup Serious Chronic Illness Survey, 2002.

management through interoperable core data transfer and (3) allow for the generation of longitudinal data analytics (e.g., outcomes, cost-effectiveness of alternative settings). The IMPACT Act of 2014 also mandates development of a Medicare payment system according to characteristics of individuals instead of according to the post-acute care setting where the beneficiary is treated.

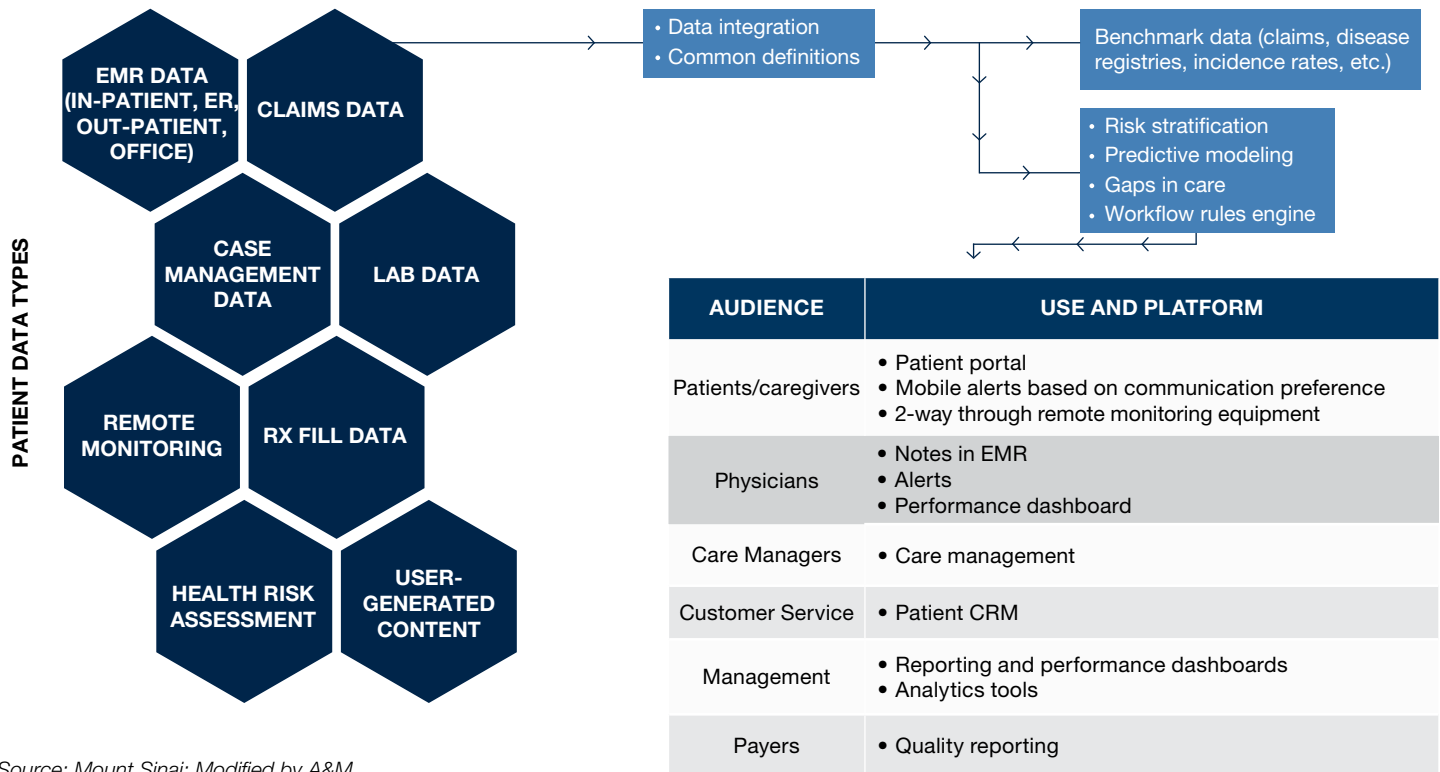
HEALTH INFORMATION EXCHANGE STILL LIMITED

Health information exchange (HIE) across sites of care within and across health systems and stand-alone providers, clinical labs, pharmacies, community organizations, patients and their caregivers is still limited. The list of stakeholders is long, but it is often necessary to share data and information to ensure care coordination and more timely intervention, optimize patient management and avoid duplication of services, medication errors and readmissions. HIMSS has developed a Continuity of Care Maturity Model to demonstrate “the evolution of communication between clinicians in different settings with limited or no electronic communication to an advanced, multi-organizational, knowledge-driven community of care.”¹⁰⁶

FIGURE 60 | HIMSS CONTINUITY OF CARE MATURITY MODEL

STAGE	CUMULATIVE CAPABILITIES
7	Knowledge driven engagement for a dynamic, multi-vendor, multi-organizational interconnected healthcare delivery model
6	Closed loop care coordination across care team members
5	Community wide patient records using applied information with patient engagement focus
4	Care coordination based on actionable data using a semantic interoperable patient record
3	Normalized patient record using structural interoperability
2	Patient centered clinical data using basic system-to-system exchange
1	Basic peer-to-peer data exchange
0	Limited or no e-communication

FIGURE 61 | HEALTH INFORMATION EXCHANGE



Source: Mount Sinai; Modified by A&M

The HIE data architecture may be centralized, where a complete copy of all patient-related information is stored; decentralized, where data is exchanged on an “as needed” basis; or a combination (hybrid) model. Data and information may be accessed directly (e.g., copy of discharge summary or medical history inclusive of medications) or via query, the latter usually for unplanned care (e.g., ED visit).¹⁰⁷ Consumer mediated exchange, formerly known as a personal health record, has not met earlier expectations with use still somewhat limited. Patient consent is required on either an explicit (opt-in) or implicit (opt-out) basis.

The promise of regional health information organizations (RHIOs) focused on a specific geographic area also remains unfulfilled, though progress is being made on a selective basis. Hixny, the NY State Capital District and Northern New York RHIO, provides real-time access to specific data — demographics, problem lists, diagnosis, medications, allergies, lab results, discharge and office visit summaries, ED reports, image studies, etc. — from 719 participating entities, including hospitals, physician groups, payers and others. Consent for participation has been obtained from more than 1 million patients; records are accessed more than 150,000 times per month.¹⁰⁸

Clinical, operational and financial data challenges are many and include antiquated technology and legacy systems, data fragmentation, disconnected systems and enterprise warehouse deficiencies. Recent implementation challenges associated with electronic medical records have preoccupied IT departments. Despite their promise, many population health and other emerging applications have not met expectations. A number of health systems are beginning to separate the informatics (analytics) staff and responsibilities from the IT personnel, though with recognition that close collaboration is necessary to optimize functionality.

“BIG DATA” IS A MISNOMER. IT’S ABOUT ACTIONABLE INSIGHTS.

The “big data” revolution has resulted in the identification and aggregation of data from disparate sources such as the electronic medical record (EMR), materials management information systems (MMIS), operating room information systems (ORIS), clinical information systems (CIS), laboratory information systems (LIS),

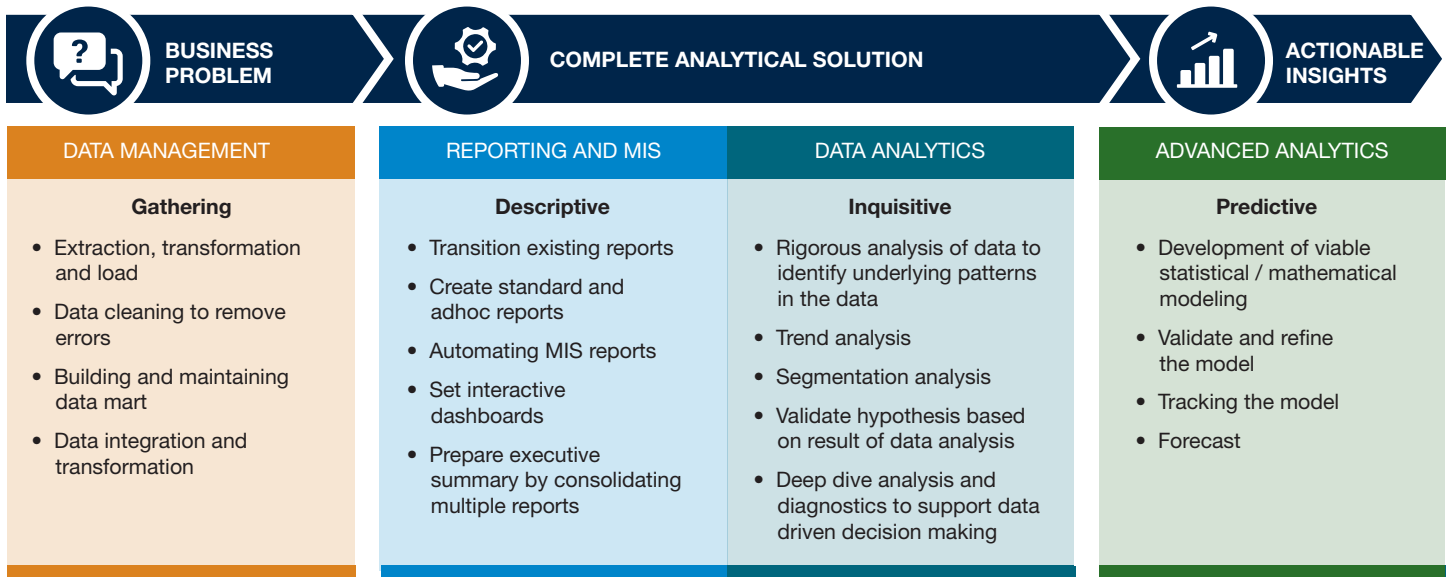
FIGURE 62 | TECHNOLOGY, DATA AND ANALYTICS CHALLENGES



human resources information systems (HRIS), financial systems, the charge master (CDM) and elsewhere to facilitate decision-making. This has led to improved data management and reporting. But the reporting of data is far different than the generation of insights that enable improved decision-making, i.e., actions that lead to measurable progress.

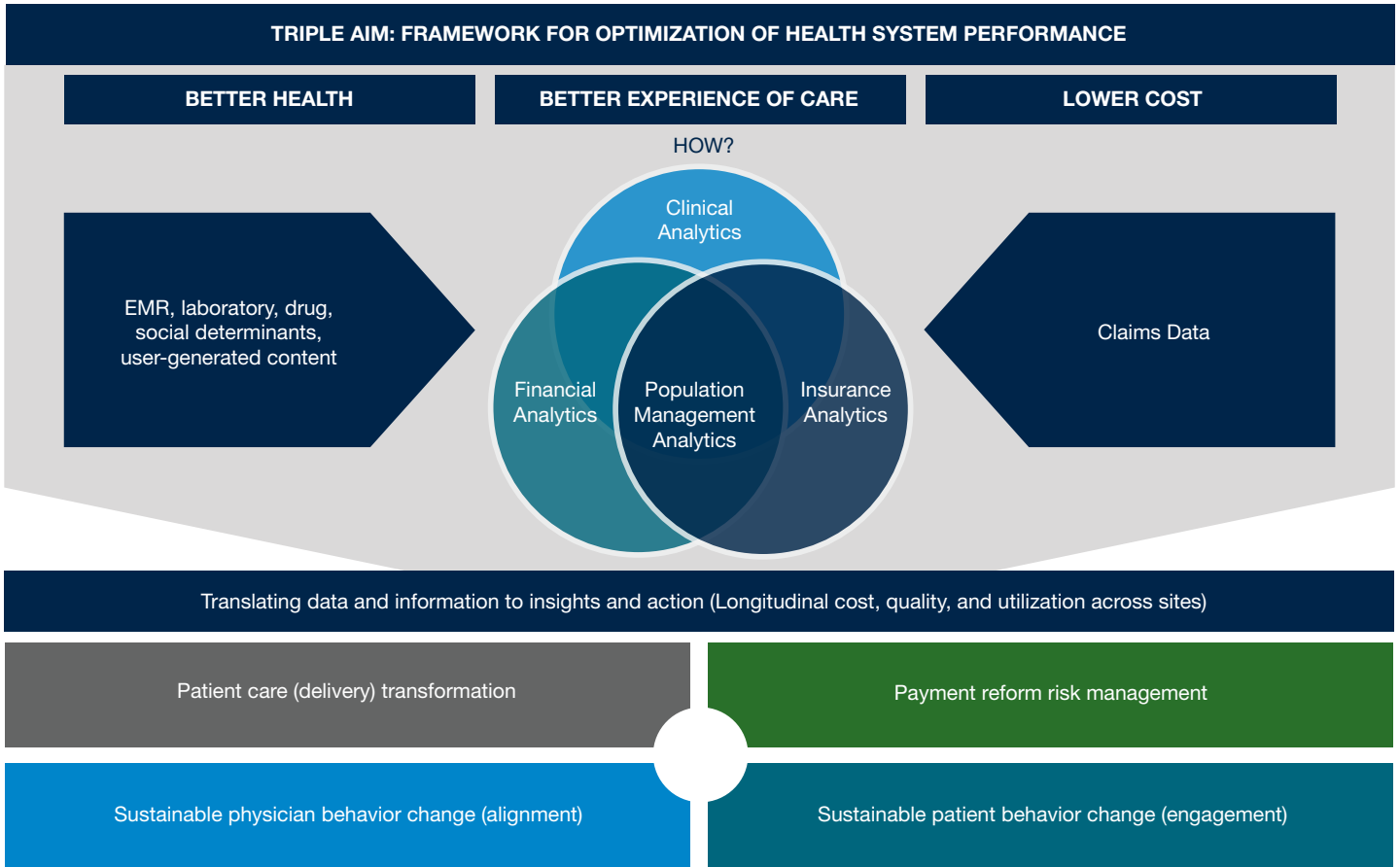
The Institute of Health Improvement (IHI) framework for operational excellence, known as the Triple Aim, is focused on improving the health of the population, the experience of care, and on reducing the per capita costs of care.¹⁰⁹ Data analysis and the use of advanced analytics are essential to its attainment. Transformative, insights-driven approaches to care delivery, risk management, physician alignment and patient engagement are required.

FIGURE 63 | ACTIONABLE INSIGHTS AS THE “BIG DATA” DELIVERABLE



Source: <http://www.cross-tab.com/data-mining-and-big-data>

FIGURE 64 | ANALYTIC FRAMEWORK FOR HEALTHCARE TRANSFORMATION

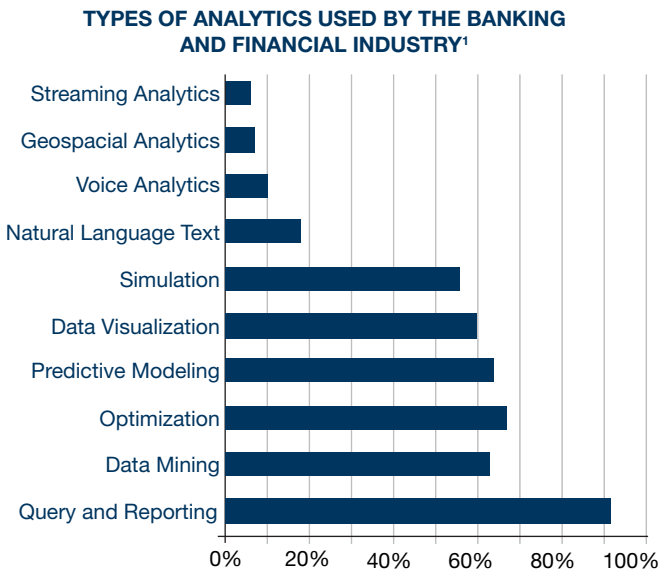


Analytics can be descriptive (historical insights – What has happened?), predictive (of future outcomes – What can happen?) and prescriptive (Assessing a number of possible outcomes based on alternative actions (scenarios) - What should we do?).¹¹⁰ The goal is to generate actionable insights that enable improved decision-making across all levels of the organization. Analytics is a complex field in which the healthcare industry remains a laggard relative to financial services and other industries.

Data can be structured or unstructured. Structured data can easily be “entered, stored, queried and analyzed” based on the definition of specific fields (e.g., currency, alphabetic, numeric) and data restrictions (e.g., number of characters).¹¹¹ Relational databases, based on structured query language (SQL) and spreadsheets are often used for structured data. Unfortunately, the vast majority of healthcare data is unstructured, i.e., not easily placed into “boxes.”

Unstructured data includes text, images, video and audio from a variety of sources, including electronic medical records (e.g., progress notes), discharge summaries, radiology reports, nurse notes, dictations and transcriptions, presentations, emails and other sources. Most people prefer unstructured data for their communications due to limited constraints and the potential for the use of rich data (e.g., video) that enhances one’s experience. The majority of providers remain unsure regarding the use and integration of unstructured data. Technologies are being developed to “capture unstructured data and convert it into formats that are easily searchable, transmittable, redactable (when necessary), and secure.”¹¹²

FIGURE 65 | TYPES OF ANALYTICS



Streaming Analytics	Allowing organizations to set up real-time analytics computations on data streaming from applications, social media, sensors, devices, websites and more.
Geospatial analytics	The gathering, display and manipulation of imagery, GPS, satellite photography and historical data, described explicitly in terms of geographic coordinates.
Voice analytics	Study vocal elements such as syllable emphasis, tone, pitch and tempo to analyze speaker mood and behaviors.
Natural language processing	Linguistic analysis that essentially helps a machine “read” text using a variety of methodologies to decipher the ambiguities in human language.
Text (data) mining	Extraction of key concepts and themes from text (data), while uncovering hidden relationships and trends.
Predictive modeling	A process that uses data mining and probability (statistics) to forecast outcomes. Each model is made up of a number of predictors, which are variables that are likely to influence future results.
Optimization	Is more than cause and effect; involves finding an alternative with the most cost effective or highest achievable performance under the given constraints, by maximizing desired factors and minimizing undesired ones.

Sources: ¹IBM Institute for Business Value and Said Business School at Oxford University, 2012; ²<https://rankminer.com/voice-analytics-vs-speech-analytics-difference/>; <http://whatis.techtarget.com/definition/geospatial-analysis>; <http://www.expertsystem.com/natural-language-processing-and-text-mining/>; https://www.ibm.com/support/knowledgecenter/en/SS3RA7_18.1.0/ta_guide_ddita/textmining/shared_entities/tm_intro_tm_defined.html; <http://searchdatamanagement.techtarget.com/definition/predictive-modeling>

FIGURE 66 | 75–80% OF HEALTHCARE DATA IS UNSTRUCTURED

“Unstructured data is the information that typically requires a human touch to read, capture and interpret properly. It includes machine-written and handwritten information on unstructured paper forms, audio voice dictations, email messages and attachments, [video; e.g., ultrasound] and typed transcriptions--to name a few.

In regard to documents used in healthcare, the Health Story Project estimates that some 1.2 billion clinical documents are produced in the U.S. each year, and about 60 percent of these contain valuable patient-care information “trapped” in an unstructured format.”²

By the year 2020, the amount of data will double every 73 days³



<https://www.slideshare.net/CharlesBarnett3/the-future-of-healthcare-and-big-data>; ²Unstructured Data in Electronic Health Record Systems: Challenges and Solutions; Datamark Solutions, January 10, 2017 <http://insights.datamark.net/white-papers/unstructured-data-in-electronic-health-record-systems-challenges-and-solutions>; ³ Cognitive Scale Forms Healthcare Group and Appoints President [Charles Barnett]

FIGURE 67 | BENEFITS OF COMPREHENSIVE DATA (EMR, CLAIMS)



	EMRS	CLAIMS
<p>ADVANTAGES</p> <ul style="list-style-type: none"> Claims data particularly relevant to in-network and out-of-network spending and resource utilization at the aggregate level; i.e., population health EMR data granularity and real-time applications facilitates patient management 	<p>ADVANTAGES</p> <ul style="list-style-type: none"> Extensive data and results capture: history, physical, lab results, radiology and pathology reports, progress notes, etc. Includes problem list inclusive of co-morbidities and their relative severity Facilitates avoidance of medication interactions and adverse events; and medication reconciliation Real-time data inclusive of recent history to assess progression Measurement of quality and productivity metrics <p>Disadvantages</p> <ul style="list-style-type: none"> Not standardized across vendors thereby limiting data exchange, integration, sharing and retrieval 	<p>ADVANTAGES</p> <ul style="list-style-type: none"> Readily available on an annual basis Standardized capture of financial and resource utilization information Extends to multiple providers <p>Disadvantages</p> <ul style="list-style-type: none"> Retrospective with payment lag does not allow for real-time patient intervention by the provider Process orientation; e.g., reporting of HgBA1c test not results. Difficult to capture patient complexity or condition severity Longitudinal data limited by health plan switching Accuracy and reliability a concern; inaccurate coding not uncommon especially with medical conditions Specialty drugs captured under medical claims

Unstructured data represents 75–80 percent of healthcare content “locked into” formats such as PDF, Word and Fast Healthcare Interoperability Resources (FHIR) specifications, the latter a standard for exchanging healthcare information electronically. Traditional Natural Language Processing (NLP) is often limited by the inability to provide adequate context (i.e., situation-specific understanding) to healthcare terminology.

Text mining, the next generation of NLP, facilitates the consumption of unstructured data into complex algorithms. It allows for the creation of structured data elements from unstructured data and provides clinical context when tagging unstructured data elements. Text mining leverages traditional medical ontologies such as SNOMED, “a standardized, multilingual vocabulary of clinical terminology that is used by physicians and other health care providers for the electronic exchange of clinical health information,” RxNorm, “providing normalized names for clinical drugs and links its names to many of the drug vocabularies commonly used in pharmacy management

and drug interaction software,” and LOINC, “a preferred code set for laboratory test names in transactions between health care facilities, laboratories, laboratory testing devices and public health authorities.”^{113,114,115}

Providers with access to timely electronic medical record data have a competitive advantage over payers. Claims data is retrospective, has a lag of at least three to six weeks, is process rather than outcome oriented (e.g., whether patients have HgBA1c test, rather than focusing on the level of results), and is subject to up-coding to maximize reimbursement. It does, however, capture useful population health, resource utilization and out-of-network (provider) data. EMR data is real-time, quantitative (e.g., actual lab results) and allows clinicians to better manage patients on a timely basis. In an at-risk, value-based environment, process-of-care enhancements, combined with a reduction in provider variation, can result in substantial improvements in efficiency and effectiveness.

CREATION OF A DATA-DRIVEN ORGANIZATION REQUIRES CHANGE MANAGEMENT

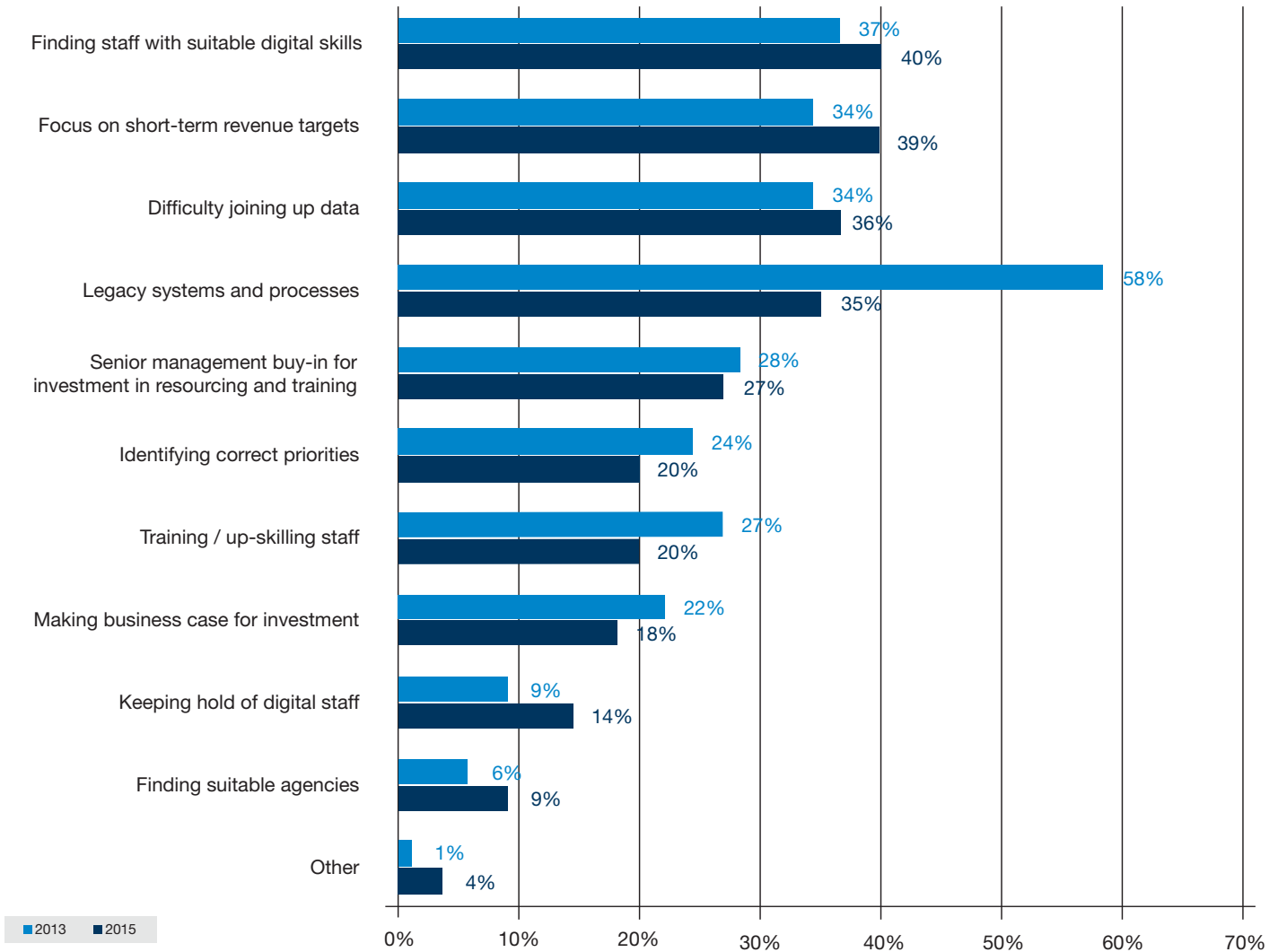
The creation of a successful data-driven organization requires the right people, process and technology. It requires a strategic, multiyear, senior executive effort. Success will require an integrated approach. The impediments to becoming more data-driven have been identified.

In addition, many healthcare professionals are more qualitatively- than quantitatively-oriented. The top 10 reported attributes of a nurse include: communication skills, emotional stability (dealing with traumatic situations), empathy, flexibility, attention to detail, interpersonal skills, physical endurance, problem-solving skills, quick response and respect.¹¹⁶ Generating insights from a numeric and graphic spreadsheet and/or dashboard cannot always be assumed.

Analysts require a breadth and depth of knowledge and experience, strategic thinking, planning skills, willingness to serve as an advocate and/or adviser, ability to learn a

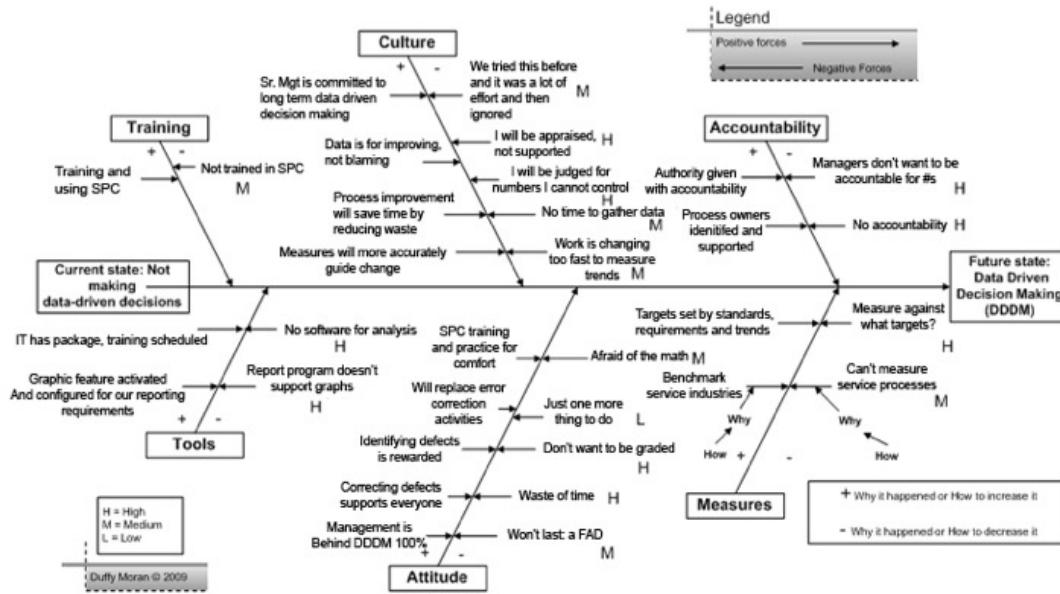
FIGURE 68 | BARRIERS TO DIGITAL ADOPTION

WHICH OF THE FOLLOWING ARE THE MOST SIGNIFICANT CHALLENGES OR BARRIERS TO DIGITAL PROCESS FOR YOUR ORGANIZATION?



Ben Davis. Skills shortage the biggest barrier to digital progress (overtaking legacy systems); Nov 30, 2015 <https://econsultancy.com/blog/67263-skills-shortage-the-biggest-barrier-to-digital-progress-overtaking-legacy-systems/>

FIGURE 69 | OPERATIONAL CHALLENGES FOR THE CREATION OF A DATA-DRIVEN ORGANIZATION



Source: http://www.processexcellencenetwork.com/ShowLargeImageWindow.cfm?image=/article_images/large/ForceEffect_F1.jpg

new domain and be “interested, curious, self-motivated, open-minded, flexible, skeptical, aware of what’s worthwhile, methodical, capable of spotting patterns, analytical, and synthetical [organizing disparate information into a cohesive whole].”^{117,118} In contrast to nurses, analysts tend to be more quantitative than qualitative.

A convergence of qualitative and quantitative skill sets is required to create a data-driven organization focused on measurement and increased accountability for performance. Change management is required.

In summary, the future of healthcare will require an increased focus on efficiency, effectiveness and the experience of care. An organization driven by analytics — the identification of actionable insights on a timely, if not real-time, basis — will be enabled to improve its decision-making and establish systems for continuous improvement. Strategic opportunities will also be identified. It’s about the interaction among people, process and technology.

FIGURE 70 | APPROACH TO BUSINESS TRANSFORMATION



Source: Presentation by S. Ramakrishnan, M. Testani . IBM Center for Learning and Development; March 2, 2011

SUSTAINABLE PHYSICIAN BEHAVIOR CHANGE (ALIGNMENT)

During the past decade, there has been an acceleration in the “corporatization” of healthcare, with hospitals merging into ever-larger health systems and insurance companies privatizing (e.g., Anthem) and acquiring each other. The five largest for-profit hospital systems own 425 hospitals, whereas the top 10 largest non-for-profit systems have 383 hospitals; 15 health systems account for 16.6 percent of the total.¹¹⁹ Health systems have also become the largest employer of physicians, either directly or through the purchase of practice assets.

Insurance companies have also consolidated, leading to limited competition in most major markets. In 2014, the five largest companies — United, Anthem, Aetna, Humana and Cigna — accounted for 46 percent of market share and generated \$380 billion in revenues.¹²⁰ The U.S. Herfindahl-Hirshman Index, a measure of market share distribution, for large group (4,442) and small group (4,527) insurance, implies highly concentrated markets with limited competition.¹²¹

Provider and insurance company consolidation has altered the “balance of power,” resulting in a loss of autonomy and a reduction in income for many physicians. A generational divide has also emerged between highly experienced physicians and more recent graduates of residency programs.

2016 represented the first year that physician practice ownership declined to under 50 percent; physicians are

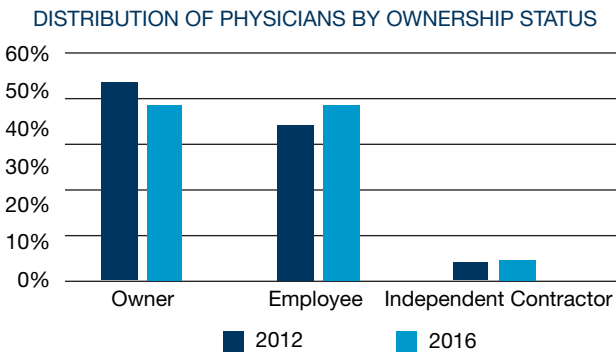
now more often employed (47 percent) or independent contractors (6 percent) than practice owners. The percentage of small, autonomous practices (<5 physicians) is declining, whereas practices with >50 physicians have grown.

Physician practice acquisitions have been driven primarily by the potential for incremental market share gains (ancillary services, procedures) and contractual upgrades with insurance companies. *Two-thirds of physicians believe that hospital employment will not improve quality or reduce costs.* Significant gaps in perception exist between hospital executives and physicians in terms of mutual trust, degree of involvement and/or collaboration and problem resolution.

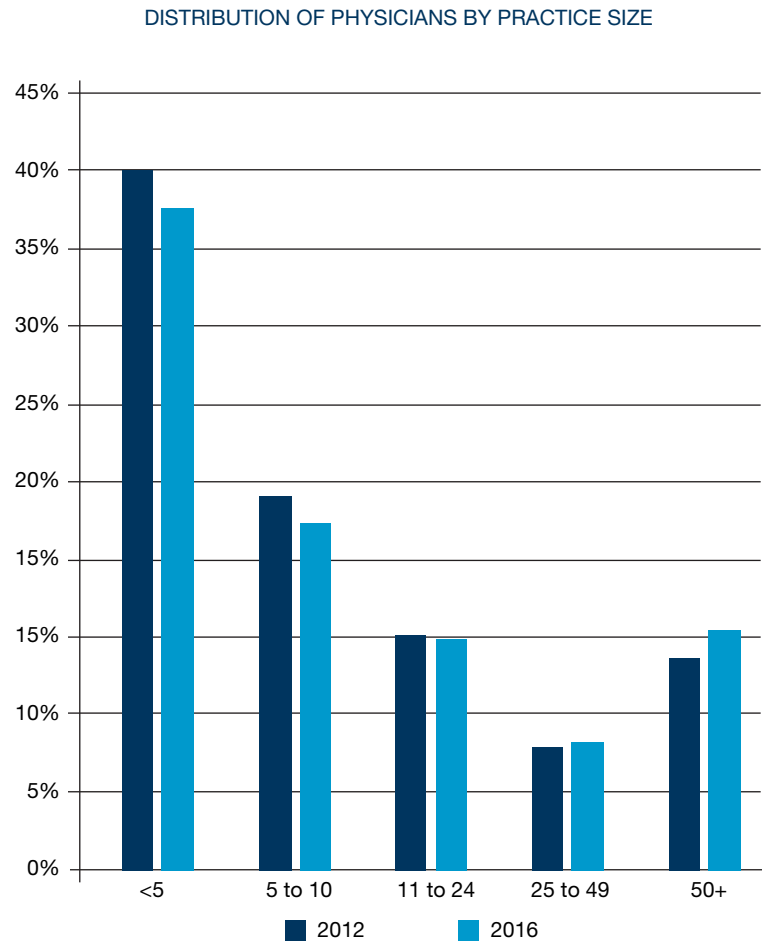
FIGURE 71 | PHYSICIAN SITUATION ANALYSIS

SITUATION ANALYSIS	OPPORTUNITIES
<ul style="list-style-type: none"> ▪ Increasing employment of physicians ▪ Gap in perception between physicians and management ▪ Loss of physician autonomy ▪ Negative physician morale ▪ Declining physician productivity ▪ Physician disengagement ▪ Specialty procedure compensation bias ▪ MACRA 	<ul style="list-style-type: none"> ▪ Physician generation divide ▪ Compensation re-alignment ▪ Back to the future: Physicians being doctors <ul style="list-style-type: none"> ▪ Data-enabled change ▪ Physician-led utilization management

FIGURE 72 | DECLINING PHYSICIAN OWNERSHIP

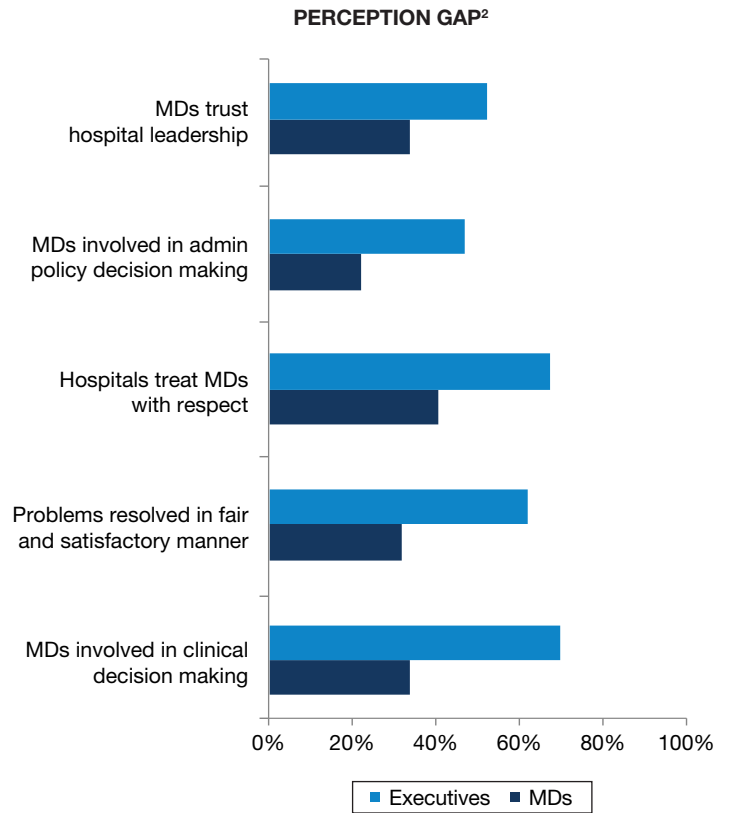
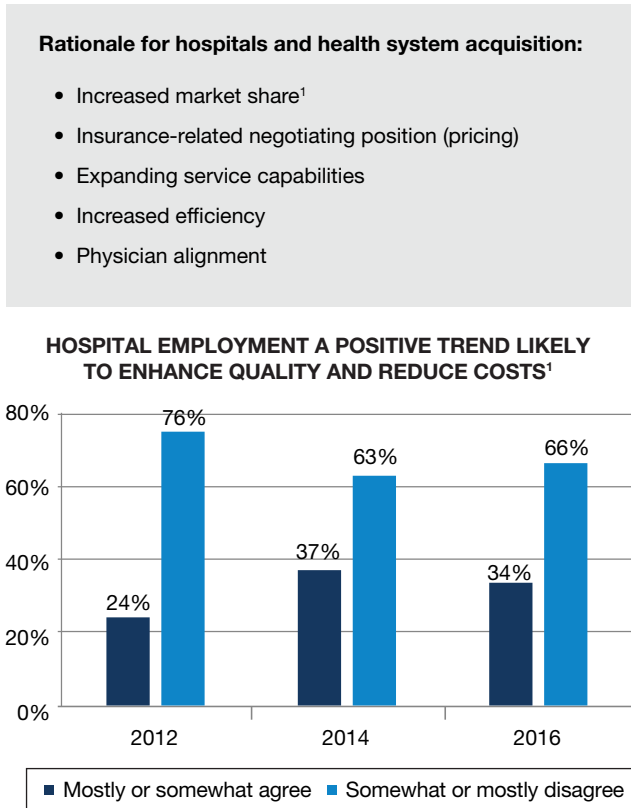


	2012	2014	2016
Wholly owned by physicians	60.1%	56.8%	55.8%
At least some hospital ownership	23.4%	25.6%	25.4%
Wholly owned by hospital	14.7%	15.6%	16.1%
Jointly owned by physicians and hospital	6.0%	7.3%	6.2%
Unknown whether wholly or jointly owned	2.6%	2.7%	3.1%
Direct hospital employee	5.6%	7.2%	7.4%
Wholly owned by not-for-profit foundation	6.5%	6.4%	6.7%
Other ²	4.4%	4.0%	4.7%
	100%	100%	100%
Sample Size	3466	3500	3500



Source: AMA Physician Benchmark Survey, 2016. Beckers 2015

FIGURE 73 | PHYSICIAN PERCEPTION GAP



Source: ¹Biennial Physician Survey, 2016. http://www.physiciansfoundation.org/uploads/default/Biennial_Physician_Survey_2016.pdf;
²<https://www.advisory.com/research/medical-group-strategy-council/practice-notes/2015/june/who-is-to-blame-for-physician-burnout>;

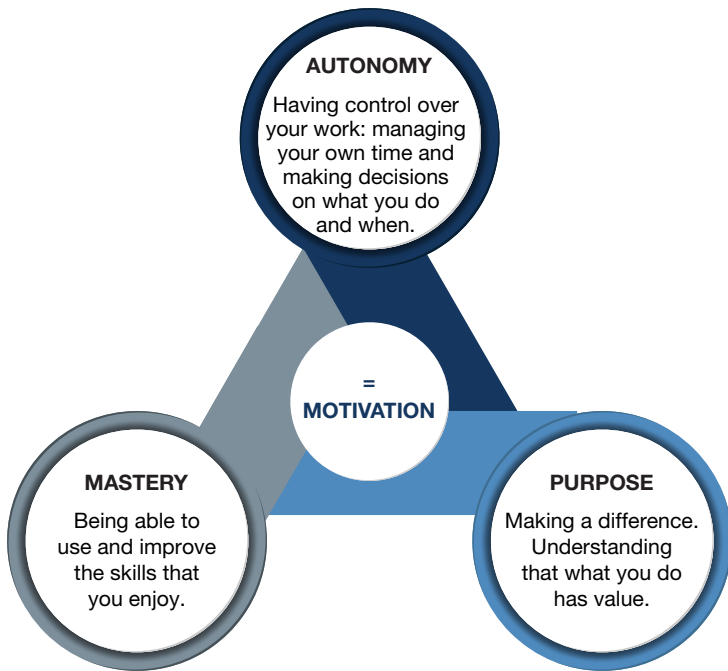
The (historical) motivators for a career in medicine include autonomy and freedom from external control; mastery, personal growth and fulfillment; and purpose and importance as reflected by achievement, status and reputation. Physician motivation is being affected by the change in their employment status and role within the healthcare ecosystem. Anecdotal feedback also suggests a decline in income and/or the additional efforts required to sustain current levels of income.

Fundamental “mindset” differences among physicians and hospital / health system administrators have contributed to the perception gaps. Physicians tend to focus on patients

based on their clinical expertise in an autonomous manner, whereas administrators focus on efficiency, standardization and reimbursement maximization.

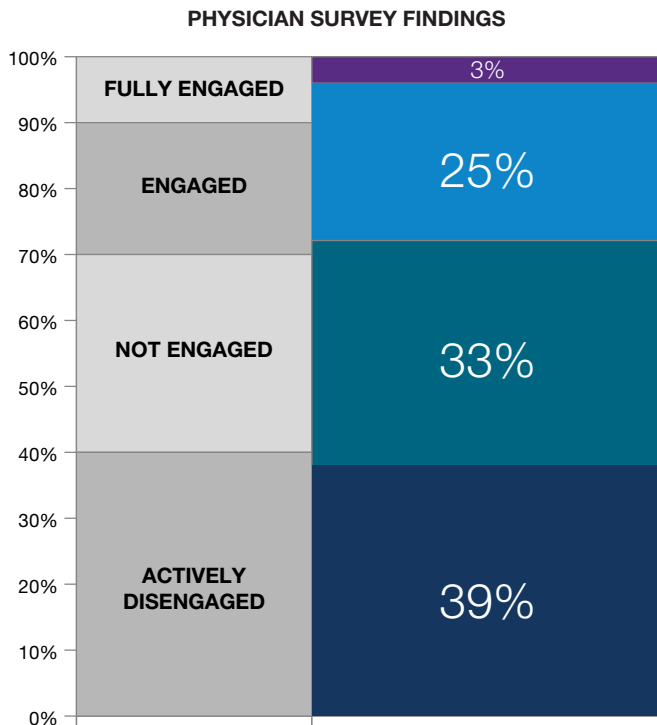
Physician morale remains negative, though improving. A majority of physicians profess somewhat or very negative feelings about the current and future state of the medical profession. Only 50 percent would recommend a career in medicine.¹²² Nearly two-thirds of physicians are either actively disengaged (39 percent) or not engaged (33 percent), resulting in lost productivity and significant opportunity costs.

FIGURE 74 | EROSION OF PHYSICIAN MOTIVATION



	PHYSICIANS	HOSPITAL AND/OR HEALTH SYSTEM ADMINISTRATION
Focus of efforts	Clinical expertise; cognitive	Efficiency; process and policy
Primary loyalty	Patients	Organization
Accountability	Individual; self-reliant	Shared; interdependent
Work flow	Practice style	Standardized

FIGURE 75 | LEVEL OF PHYSICIAN ENGAGEMENT, 2016



- In one hospital studied, fully engaged physicians gave the hospital an average of **51% more inpatient referrals** and **3% more outpatient referrals** than physicians who were not engaged.
- Fully engaged physicians were **26% more productive** than less engaged physicians, which amounted to an additional \$460,000 on average inpatient revenue per physician per year.

¹<https://www.jacksonhealthcare.com/physician-trends/articles/physician-engagement-alignment-2016-report/>; ²Gallup study on physician engagement quoted in "What Too Many Hospitals are Overlooking" by Craig Kamins www.gallup.com/businessjournal/181658/hospitals-overlooking.aspx

Motivation and engagement are being negatively affected, with data suggesting 3.9 fewer patients, or 16.7 percent, being seen daily in 2016 as compared to 2008. Hours worked have declined by 7.2 percent during this period.

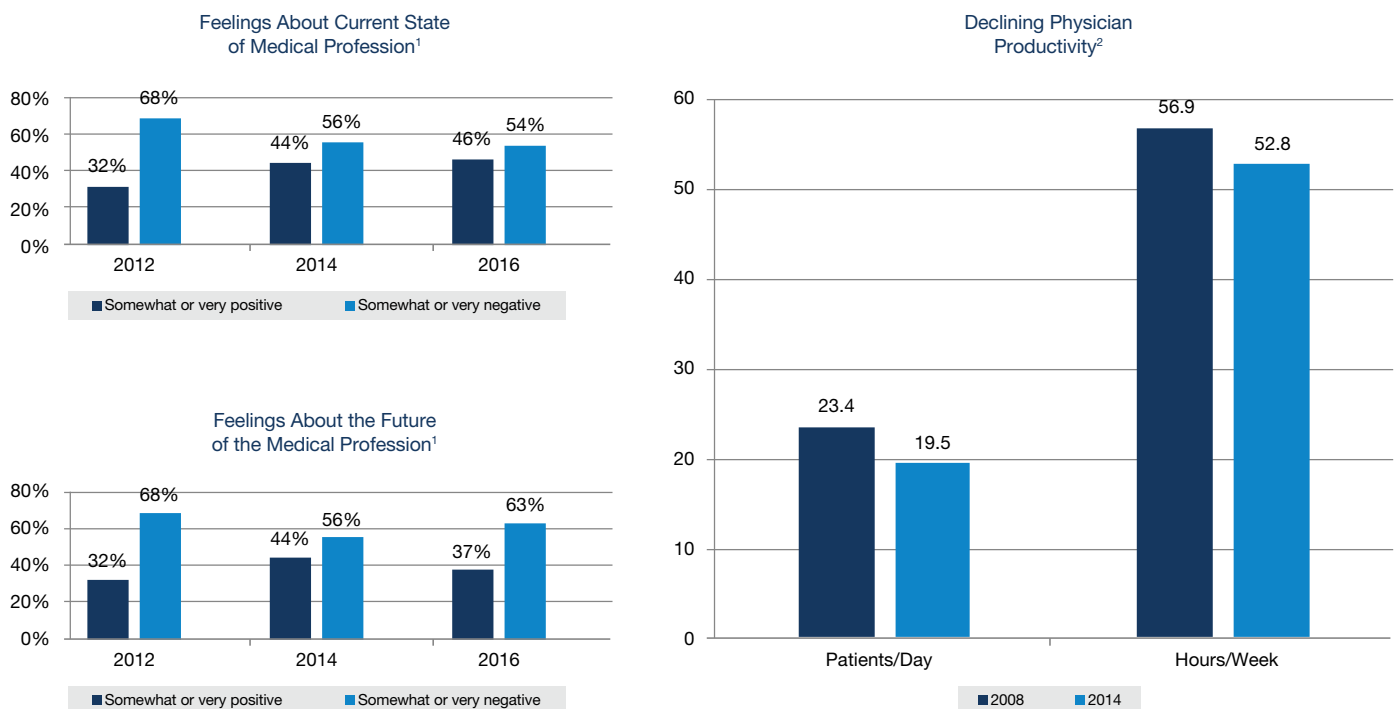
According to the 2016 Survey of America’s physicians (n=17,000), physicians estimate that 21 percent of their time is spent on nonclinical matters.¹²³ Electronic medical records have not emerged as the panacea envisioned by the HITECH Act of 2009, as the majority of physicians, 59.4 percent, believe patient interactions have been reduced, and 55.4 percent attribute a decline in efficiency to EMRs. Nearly three-quarters of physicians experience feelings of professional burnout: always, 17.2 percent; often, 31.4 percent; and sometimes, 25.4 percent.

The leading inpatient (EPIC, Cerner, Meditech, CPSI) and ambulatory (EPIC, Allscripts, eClinicalWorks, NextGen) electronic medical records have not yet completed their evolution from coding, documentation and process-driven

improvements (i.e., “consistent use of structured problem, medication and allergy lists, e-prescribing”) to health outcomes.¹²⁴ Significant limits to interoperability across the continuum of care exist. Data extraction and the use of analytics (e.g., provider / procedure variation, decision support) remain an opportunity.

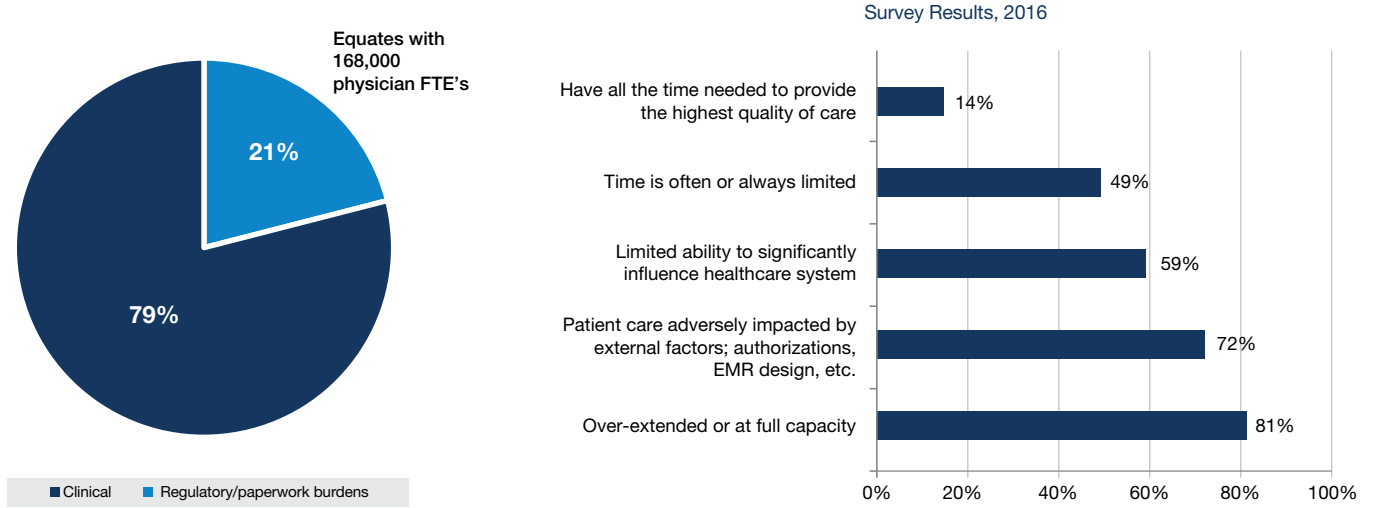
A study published this month in the Annals of Family Medicine titled “Tethered to the EHR: Primary care physician workload assessments using EHR log data and time motion observations” concluded that primary care physicians “spend more than one-half of their workday, 5.9 hours (of 11.4 hours), interacting with the electronic health record during and after clinic hours.”¹²⁵ The measured results far exceeded their own perception of time spent with electronic health records of 21 percent, the equivalent of 2.4 hours, captured in a 2016 survey.¹²⁶ Documentation, computerized physician order entry (CPOE) and prescription refills alone account for three hours per day.

FIGURE 76 | NEGATIVE PHYSICIAN MORALE AND PRODUCTIVITY



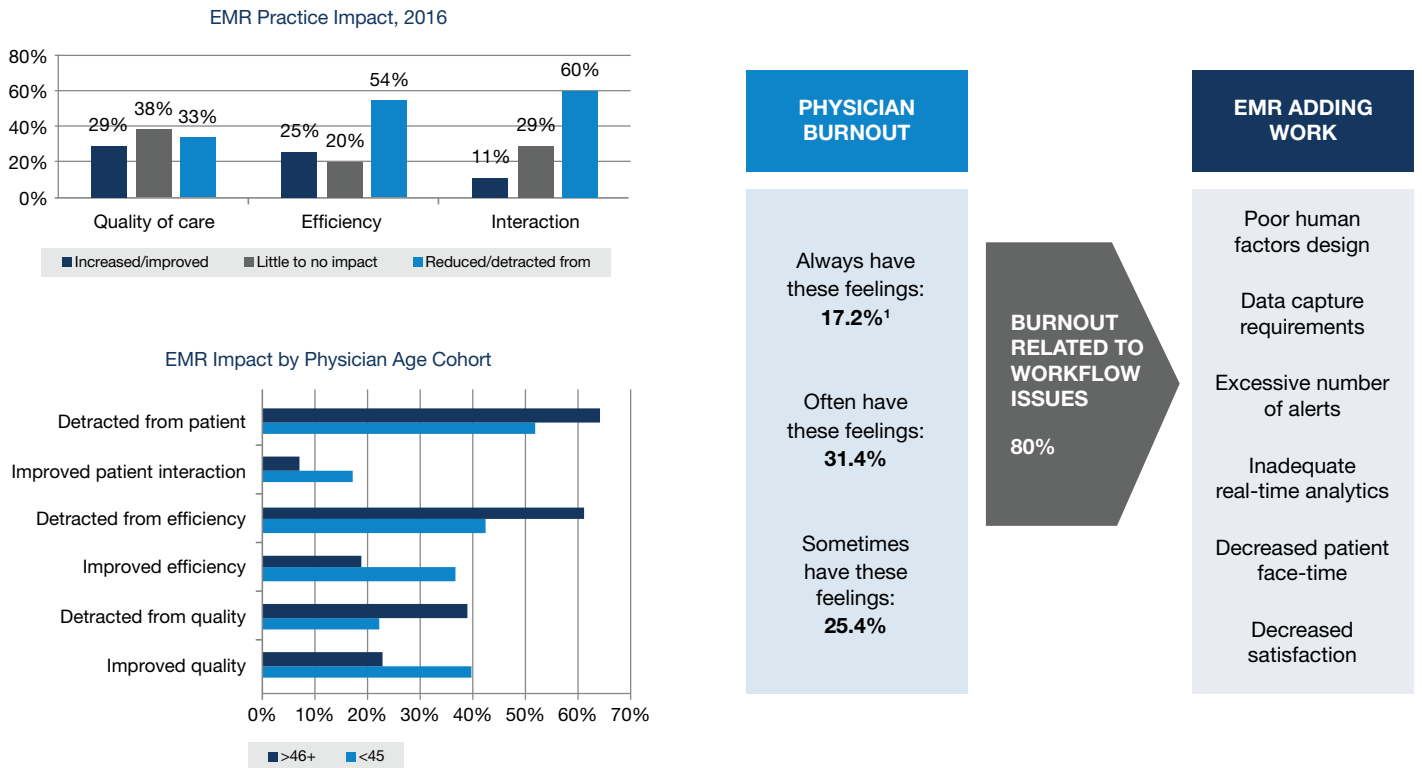
¹http://www.physiciansfoundation.org/uploads/default/Biennial_Physician_Survey_2016.pdf; ²The Physician Employment Trend: What You Need to Know. Fam Pract Manag. 2015 Jul-Aug;22(4):11-15. <http://www.aafp.org/fpm/2015/0700/p11.html>

FIGURE 77 | FACTORS CONTRIBUTING TO PHYSICIAN PRODUCTIVITY DECLINE



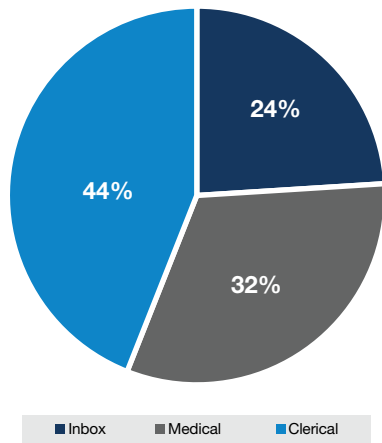
http://www.physiciansfoundation.org/uploads/default/Biennial_Physician_Survey_2016.pdf

FIGURE 78 | IMPACT OF ELECTRONIC MEDICAL RECORDS



http://www.physiciansfoundation.org/uploads/default/Biennial_Physician_Survey_2016.pdf; 2NEJM Catalyst. Are EMRs to Blame for Physician Burnout? Interview · October 24, 2016 <http://catalyst.nejm.org/electronic-medical-records-blame-physician-burnout/>

FIGURE 79 | PRIMARY CARE PHYSICIAN TIME SPENT PER DAY ON EHR TASKS



EHR TASK CATEGORY	DESCRIPTION
Clerical	Administrative, Billing and Coding, Documentation, Order Entry and System Security
Medical Care	Chart Review (Imaging, Laboratory, Medications, Notes) and Point of Care Support (Evidenced Based Medicine)
Inbox	Refills and Results Management, Letter Generation, MyChart Portal, Telephone Call

Annals of Family Medicine. Tethered to the EHR: Primary Care Physician Workload Assessment Listing EHR Event Log Data and Time-Motion Observations; September/October 2017 vol. 15 (5): 419-426

A significant generation divide has emerged between physicians older and younger than 45 years of age. Assuming medical school and completion of residency training at 30–35 years of age implies a breakpoint approximating 10–15 years of clinical practice. The generational divide reflects significant changes in care delivery, including hospital consolidation and emergence of large health systems, physician practice acquisitions, new insurance company products (e.g., HMOs, PPOs and high-deductible plans), industry consolidation, medical technology evolution (e.g., stents, imaging), electronic medical records and digital health. Younger physicians — those <45 years of age — are more optimistic about the future.

In 2015, there were 784,600 physicians in the U.S., 230,400 primary care (excluding 27,900 hospitalists) and 565,100 non-primary care physicians.¹²⁷ In its 2017 update of projected physician supply and demand, the Association of American Medical Colleges (AAMC) forecast a shortage of primary care physicians ranging from 7,300 (25th percentile) to 43,100 (75th percentile) in 2030.¹²⁸ A 20 percent shortage in 2030 is also forecast for medical specialists, thereby limiting the ability to increase their primary care patient load.

A range of scenarios were generated to create the output. The AAMC model is an update and does not reflect a significant change in reimbursement and the process of care:

- A baseline shortage of 8,400 primary care physicians in 2015 is forecast to reach 19,500 in 2020.
- Increased use of care extenders. Physician-to-physician assistant ratio declines from 7.2: 1 in 2015 to 3.5:1 in 2030. Advanced practice registered nurse (APRN) ratio declines from 3.6:1 to 1.9:1.
- One-third of all physicians will be >65 within the next decade.
- Physicians currently <age 35 will continue to work about 13 percent fewer hours than earlier cohorts.
- Increased use of population health. Short-term decline in demand offset by longer-term impact of longevity.
- No change in the demand for healthcare services among the Medicaid (and uninsured populations) despite Medicaid expansion.
- Shortages primarily driven by incremental need for family / general practitioners and internal medicine specialists due to rapid growth of the aging population >65 years, from 46.6 million in 2015 to 72.8 million in 2030, an increase of 56.3 percent, as compared to the <18 population, growing at 5 percent during the 15-year period.

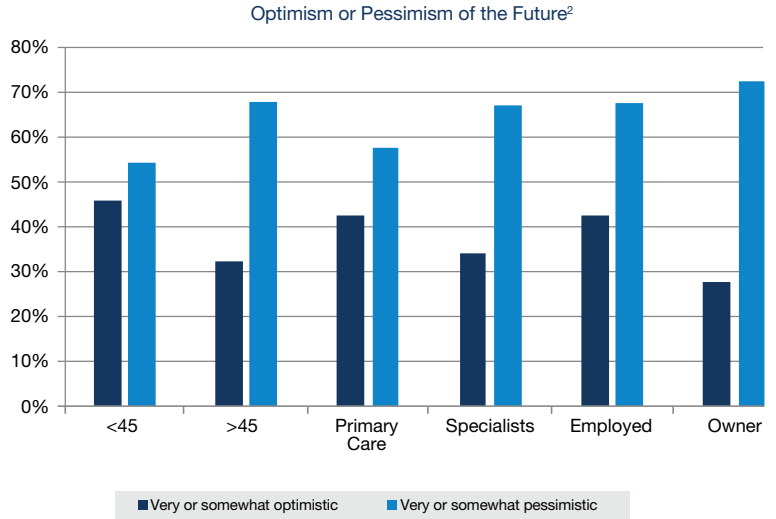
FIGURE 80 | GENERATION DIVIDE AMONG PHYSICIANS

Satisfied physicians are more likely to be:

- Between 25-44 years
- Work 8 hours per day
- Be employed and have never worked in private practice
- Have chosen employment for lifestyle reasons
- Have a greater number of patients with private insurance

Dissatisfied physicians are more likely to be*:

- Between 45-64 years
- Work >8 hours per day
- Own a solo practice
- Say patients are delaying treatments
- Say have lost patients due to ACA



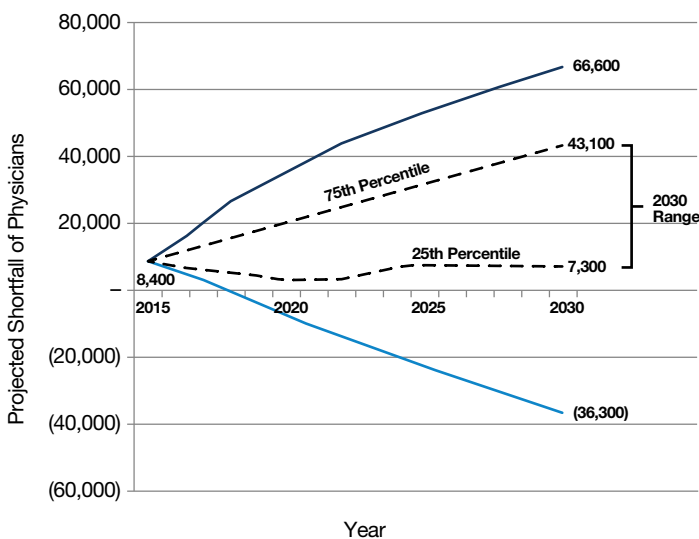
*11% of active physicians between 65-75; 26% between 55-64 with many planning to retire within 5-10 years¹

¹AAMC. *The Complexities of Physician Supply and Demand: Projections from 2014 to 2025. 2016 update* https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf. ²Biennial Physician Survey 2016 http://www.physiciansfoundation.org/uploads/default/Biennial_Physician_Survey_2016.pdf

A&M believes the projected 75th percentile, a shortage of 43,100, is likely understated given the ongoing reduction in physician productivity and the assumption of a 50 percent increase in the ratio of nurse practitioners and physician assistants to primary care physicians. Care

extenders are not physicians; their training is relatively limited. The current fee-for-service environment devalues cognitive skills and is focused on relative value units (throughput). A value-based ecosystem is focused on health outcomes, thereby greatly enhancing the role

FIGURE 81 | PROJECTED SHORTFALL OF PRIMARY CARE PHYSICIANS, 2015-2030



Nurse practitioner (advanced practice registered nurses) requirements vary from state to state:

- All states require an RN license
- All states require some form of advanced training beyond undergraduate RN training
- 27 states require a masters degree in nursing (or a related clinical field)
- 35 states require national certification
 - Evidence of completion of a minimum of 500 clinical clock hours of faculty-supervised practice;
 - Evidence of completion of the APRN core courses: advanced physical assessment, advanced pharmacology, and advanced pathophysiology;
- California requires specialization as adult nurse practitioner, pediatric nurse practitioner, obstetrical-gynecological nurse practitioner and family nurse practitioner
- Delaware requires practice in the specialty for which you are applying of either 600 hours over the past two years or 1500 hours over the past five years,
- Mississippi requires completion of a 720 hour residency that was monitored by either a licensed physician or certified APRN

The Complexities of Physician Supply and Demand: Projections from 2015 to 2030; 2017 Update https://aamc-black.global.ssl.fastly.net/production/media/filer_public/a5/c3/a5c3d565-14ec-48fb-974b-99fafaecb00/aamc_projections_update_2017.pdf



of primary care physicians and their ability to manage complex, comorbid patients, i.e., “frequent flyers.” The 75–84 year old cohort — the population with a rapid increase in Medicare expenditures due to an increase in the number of comorbidities and their severity (e.g., class, stage) — is forecast to increase from 13.6 million in 2015 to 25.2 million in 2030, an increase of 85.3 percent. Team-based case management is resource-intensive and requires a focus on prevention and the timely intervention of physicians well-versed in pharmaceutical optimization and self-management.

Primary care physicians are among the lowest-paid practitioners in a fee-for-service reimbursement system driven by procedures. Patient engagement, prevention and care coordination efforts have not been adequately, if at all, rewarded. Health systems in a risk-based, value-oriented care delivery system will need to reconsider its compensation system based on throughput. A reduction in ambulatory care-sensitive condition hospital admissions and readmissions, as well as a more conservative approach to ancillary services and surgical and non-surgical procedures, will drive future profitability.

The implementation of MACRA by CMS in 2019 will fundamentally alter Medicare physician reimbursement. The Merit-based Incentive Payment Systems (MIPS), to be applied to the vast majority of physicians, and (advanced) Alternative Payment Model (APMs), applied to ACOs, episodes of care and medical homes, will increase provider focus on a composite score of quality, cost, the use of information and clinical practice improvement; weighting will evolve over time. MACRA will replace the individual system scores for the Physician Quality Reporting System (PQRS), Value-based Payment Modifier (VM) and Medicare EHR Incentive Program for Eligible Professionals.¹²⁹ MIPS bonus and penalty opportunities will range from +/- 4 percent of Medicare reimbursement in 2019 to +/- 9 percent by 2022.¹³⁰ Hospitals are not MIPS participants.



FIGURE 82 | PHYSICIAN COMPENSATION BY SPECIALTY

SPECIALTY	TOTAL COMPENSATION
Highest Paid	
Orthopedic Surgery: Spine	\$777,262
Cardiology: Interventional	\$587,500
Orthopedic Surgery: General	\$576,677
Gastroenterology	\$529,233
Dermatology	\$457,419
Lowest Paid	
Hospitalist: Internal Medicine	\$278,471
Psychiatry: General	\$255,543
Internal Medicine: General	\$247,319
Pediatrics: General	\$231,637
Family Medicine (without OB)	\$230,456

SPECIALTY	COMPENSATION/ wRVU
Hematology/Oncology: Oncology	\$86.51
Orthopedic Surgery: General	\$71.99
Anesthesiology: Pain Management	\$70.00
Hospitalist: Internal Medicine	\$69.15
Orthopedic Surgery: Spine	\$65.11
Psychiatry: General	\$63.95
Cardiology: Interventional	\$63.59
Dermatology	\$63.51
Cardiology: Noninvasive	\$63.00
Surgery: General	\$62.95
Gastroenterology	\$62.84
Pulmonary Medicine: General	\$62.44
Urology	\$57.51
Internal Medicine: General	\$53.09
Obstetrics/Gynecology: General	\$51.94
Emergency Medicine	\$50.34
Ophthalmology	\$48.19
Family Medicine (without OB)	\$47.92
Pediatrics: General	\$46.86

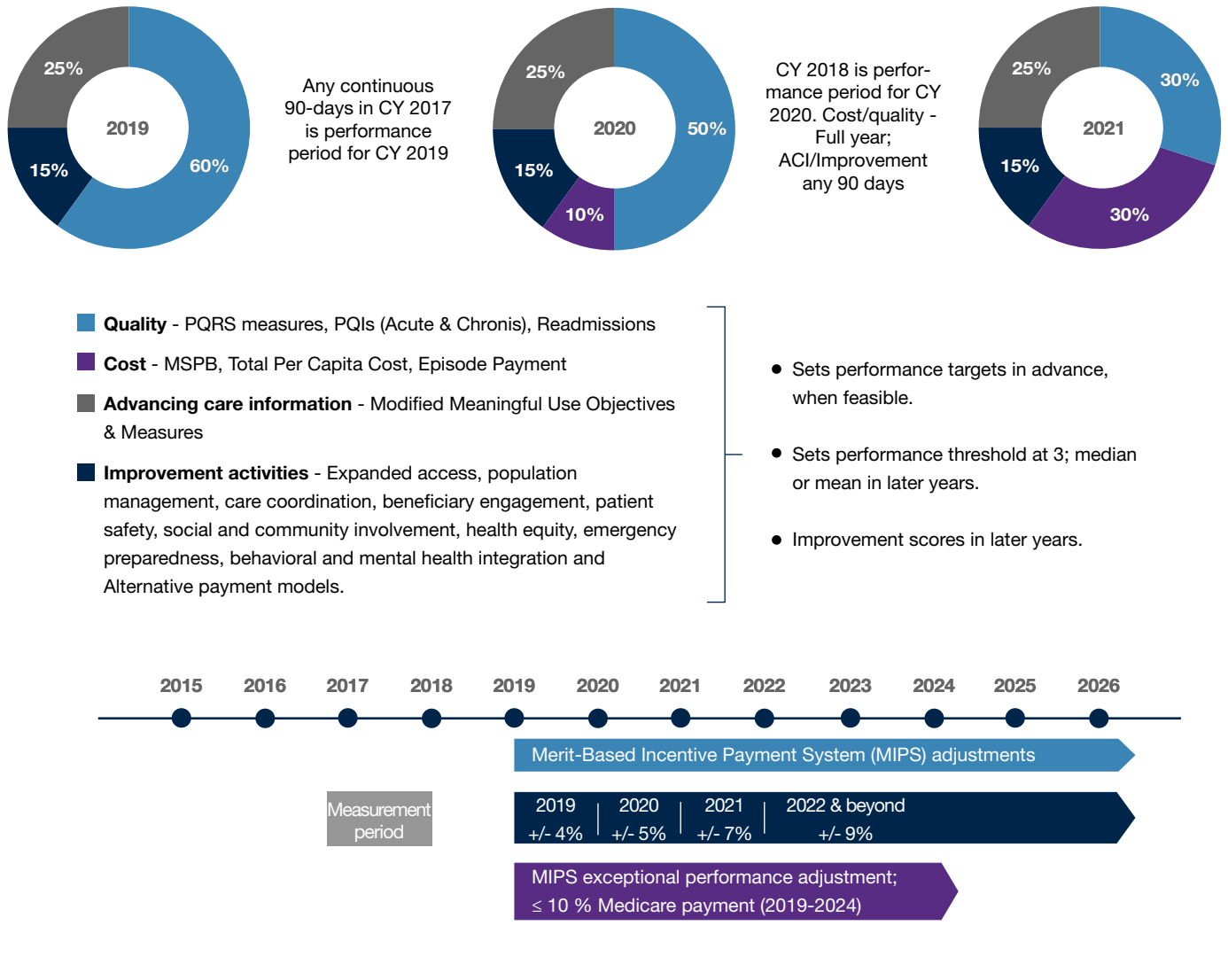
HOW RVUS ARE CALCULATED

- Each CPT code has numeric value representing its relative value or weight
- 3 measures multiplied by a conversion factor to create a fee schedule (allowable reimbursement).
- Total RVUs (TRVU) are calculated for each CPT by adding:

$$\begin{array}{r}
 \text{Physician Work RVU (wRVU)} \\
 + \text{Practice Expense RVU (peRVU)} \\
 + \text{Malpractice Expense RVU (mpRVU)} \\
 \hline
 \text{Total RVU (TRVU)} \\
 \hline
 \text{X Conversion Factor (CF)} \\
 \hline
 \text{Fee Schedule (allowable reimbursement)}
 \end{array}$$

Source: MGMA, 2016

FIGURE 83 | MACRA TO FUNDAMENTALLY ALTER MEDICARE PHYSICIAN COMPENSATION



Composite score details are still being developed. Common elements include a focus on population health; care coordination, information exchange and

clinical outcomes; patient safety, the experience of care, engagement and self-management; and comparative episode, condition and total (per capita) costs.

FIGURE 84 | MACRA COMPOSITE SCORE DETAILS

<p>QUALITY (2019 WEIGHT: 60%; 2021 WEIGHT: 30%)</p> <p>Six measures with no domain required – select from over 300 measures. One cross-cutting (e.g., care plan) and one outcome measure required. Focus areas:</p> <ul style="list-style-type: none"> - Clinical care, inclusive of gaps in care - Safety (e.g., diagnostic accuracy) - Care coordination (e.g., team-based, new technologies such as telehealth) - Patient and caregiver experience - Affordable care 	<p>COST (2019: 0% > 2021: 30%)</p> <ul style="list-style-type: none"> - Compare resources used to treat similar care episodes and clinical condition groups across practices - Can be risk-adjusted to reflect external factors - CMS will calculate from claims
<p>ADVANCING CARE INFORMATION (2019-21: 25% UNCHANGED)</p> <ul style="list-style-type: none"> - Former Meaningful Use - Use of certified electronic health record (EHR) technology in day-to-day practice - Emphasis on interoperability and information exchange. - Removes reporting for CPOE(Computerized Provider Order Entry) and Clinical Decision Support 	<p>IMPROVEMENT ACTIVITIES (2019-21: 15% UNCHANGED)</p> <ul style="list-style-type: none"> - Expanded practice access - Population management - Care coordination - Beneficiary engagement - Patient safety and practice assessment - Participation in an APM

Adopted from CMS Quality Measure Development Plan. Supporting the Transition to the Merit-based Incentive Payment System (MIPS) and Alternative Payment Models (APMs); May 2, 2016; and presentation by Health Catalyst, "Making Sense of MACRA," May 2016

Compensation realignment is required for an at-risk environment. Productivity-based compensation unrelated to outcome is a function of volume, not value. Incentive-based compensation is necessary to facilitate behavior change consistent with the strategic reorientation of an organization. A fundamental challenge for health system

leadership and human resources personnel responsible for compensation will be a reorientation to population health metrics focused on the total cost of care, inclusive of prevention, rather than the near-term maximization of inpatient and ancillary revenues.

FIGURE 85 | COMPENSATION REALIGNMENT

ELEMENTS OF COMPENSATION	PCP COMPENSATION IN CURRENT VOLUME-BASED REIMBURSEMENT WORLD	PCP COMPENSATION IN FUTURE VALUE-BASED REIMBURSEMENT WORLD
Productivity	4864 RVUs*	Panel of 2500 patients
Compensation Rate	\$41.00	Not Applicable
Productivity-Based Compensation	\$199,424	Not Applicable
Guaranteed Salary	none	\$136,924
Incentive-Based Compensation	\$7,500	\$60,000
For Service Quality	\$2,500	\$10,000
For Clinical Quality	\$5,000	\$50,000
Per-Patient Per-Month Management Fee	none	\$4.00 (x2500 patients) = \$10,000
Total Compensation*	\$206,924	\$206,924

*Based on 2012 MGMA median for family medicine.



SUSTAINABLE PATIENT BEHAVIOR CHANGE (ENGAGEMENT)

According to the AHRQ, “patient experience encompasses the *range of interactions* that patients have with the health care system, including their care from health plans, and from doctors, nurses, and staff in hospitals, physician practices, and other health care facilities. Satisfaction, on the other hand, is about whether a patient’s *expectations* about a health encounter were met.”¹³¹ The majority of Americans rate their *personal experience of care* during their last physician (provider) visit as excellent or good.¹³²

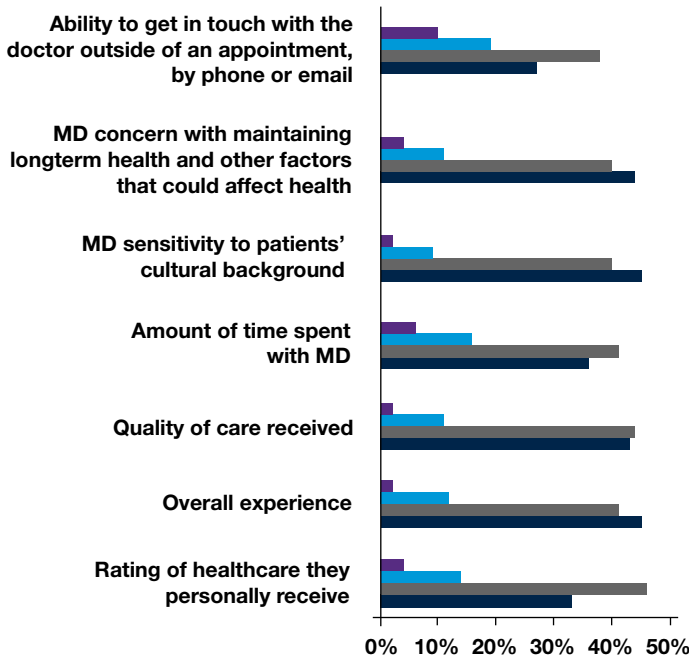
Americans also rate their hospital experience as positive, though at a lower rate of satisfaction than physician (provider) visits. Nurse communications appears to be more important than perceived medical quality in driving overall patient satisfaction (above a baseline threshold level).

However, from the overall healthcare system perspective, adults have a far less favorable impression of healthcare

delivery, with only 38 percent having a good or excellent impression. During 2015–16, the perceived health status of state residents other than themselves appears to be declining at nearly two times the rate of those who appear to be improving. The cost of healthcare is a major problem for 52 percent of survey participants, with serious financial disruption for 26 percent.

FIGURE 86 | CONSUMER RATING OF PERSONAL CARE

% ADULTS RATING ASPECTS OF MOST RECENT VISIT TO A PHYSICIAN OR OTHER HEALTH PROVIDER

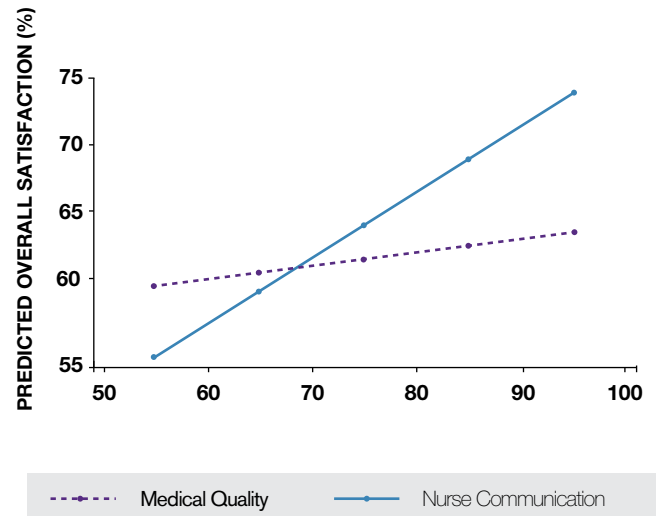


Reason(s) for being extremely or very satisfied	Determinants of Primary Care Satisfaction ²
Customer service (42%)	Caring/Cares about me/my health Personable/Friendly/Good personality Patient/Takes sufficient time with me/ Doesn't rush you in and out Provides good/quality care Other positive customer service mentions
Communication (36%)	Listens to me/my concerns Takes time to talk with me/Explains situation/issues Answers questions Other positive communication mentions
Treatment (35%)	Addresses all my problems/needs Thorough/Takes time when examining me Good/Accurate diagnosing/treatment Other positive treatment mentions
General positive feelings (26%)	Good/Like doctor physician Good/Happy/Satisfied with experience Efficient/Good job Other positive mentions
Scheduling (17%)	Availability/Able to get appointment in timely manner Quick/Fast/Handles everything in timely manner Other positive scheduling mentions
Intelligence (12%)	Intelligent/Knowledgeable Professional Other positive intelligence mentions
Relationship (10%)	Have been with same doctor for long time Other positive relationship mentions

Source: Patients' Perspective on Healthcare in the U.S., 2016. <http://www.npr.org/assets/img/2016/02/26/PatientPerspectives.pdf>; Harris Interactive for The Physicians Foundation. Consumer Attitudes toward Family / Primary Care Physicians and the U.S. Healthcare System; July 2012, Table 1c (n=1,807);

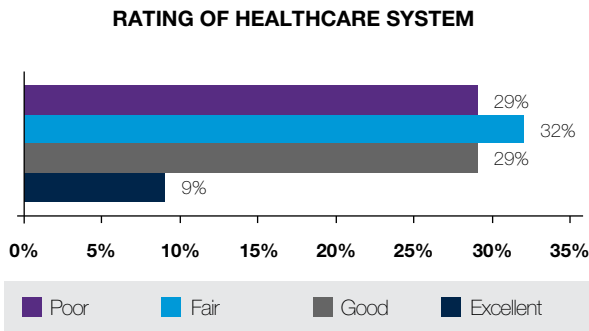
FIGURE 87 | DETERMINANTS OF HOSPITAL (INPATIENT) CUSTOMER SATISFACTION

	U.S. Average 2015
Patients who reported that the nurses "always" communicated well	80%
Patients who reported that their doctors "always" communicated well	82%
Patients who reported that they "always" received help as soon as they wanted	68%
Patients who reported that their pain was "always" well controlled	71%
Patients who reported that staff "always" explained about medicines before giving it to them	65%
Patients who reported that their room and bathroom were "always" clean	74%
Patients who reported that the area around their room was "always" quiet at night	62%
Patients who reported that YES, they were given information what to do during their recovery at home	86%
Patients who gave their hospital a rating of 9 or 10 on a scale from 0 (lowest) to 10 (highest)	71%
Patients who reported YES, they would definitely recommend the hospital	71%

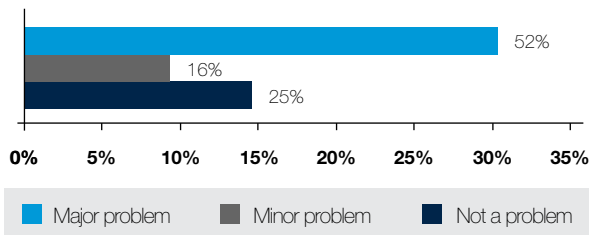


Sources Summary of Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey Results, July 2015 to June 2016 Discharges http://www.hcahpsonline.org/Files/April_2017_%20Summary%20Analyses_States.pdf

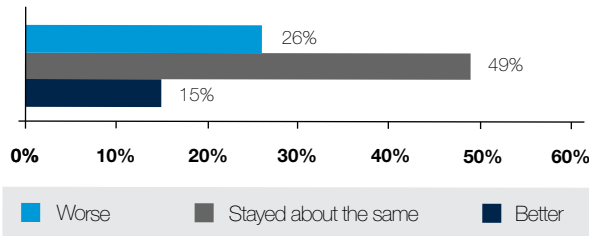
FIGURE 88 | OVERALL CONSUMER RATING OF HEALTHCARE SYSTEM



HEALTH COSTS ARE OR ARE NOT A PROBLEM IN THEIR STATE



HEALTH STATUS OF PEOPLE IN THEIR STATE DURING PAST TWO YEARS



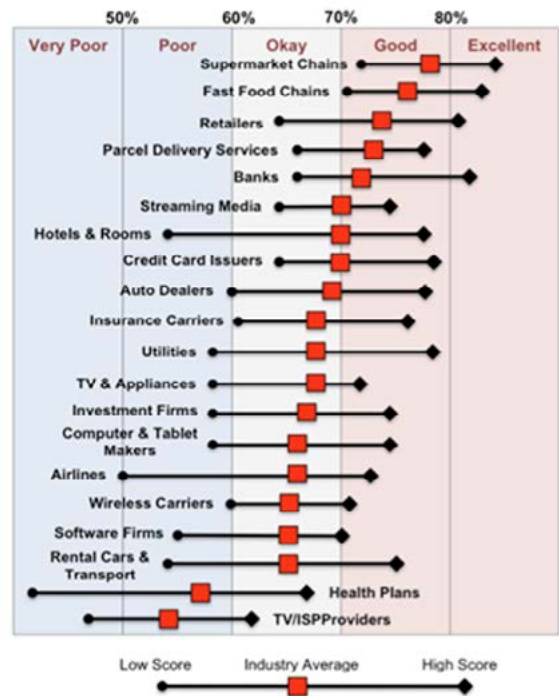
HEALTH CARE COSTS CAUSED A SERIOUS FINANCIAL PROBLEM 26%

Set up a payment plan with a hospital or health care professional	44%
Spent all or most of their personal savings	42%
Contacted by bill collectors	39%
Unable to pay for basic necessities like food, heat or housing	27%
Taken on credit card debt that may be difficult to pay off	23%
Taken out a loan that may be hard to pay back	19%
Declared bankruptcy	7%

The Temkin Group, a leading market research firm, determined the average consumer experience rating of health plans as poor based on three criteria: Functional – How well do experiences meet customer needs?; Accessibility – How easy is it for customers to do what they want to do?; and Emotional – How do customers feel about the experience? Rating contributors include rising premiums, limited understanding and transparency associated with payment terms (e.g., deductibles, co-payments, out-of-pocket maximums), service coverage, network inclusion and billing, and customer service issues.

FIGURE 89 | EXPERIENCE RATING BY INDUSTRY

2017 TEMKIN EXPERIENCE RATINGS (TXR), RANGE OF INDUSTRY SCORES



2017 TEMKIN EXPERIENCE RATINGS (TXR), TOP AND BOTTOM ORGANISATIONS

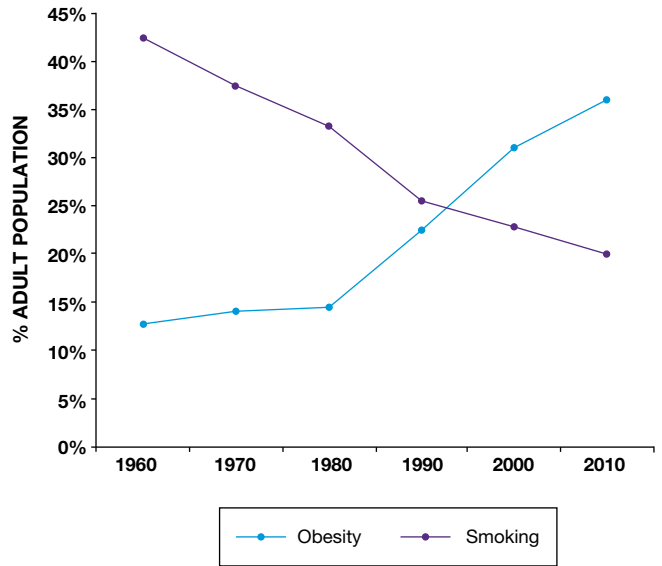
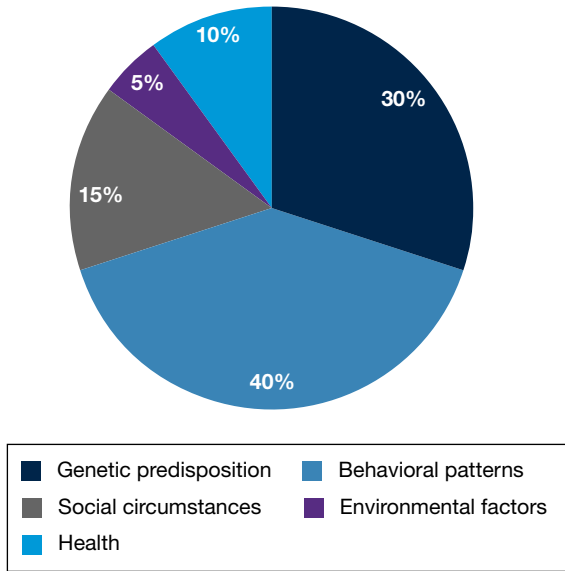
Rank	Top Rated	Industry	TxR	Rank	Bottom Rated	Industry	TxR
1	Publix	Supermarkets	84%	331	Health Net	Health Plans	42%
2	Chick-fil-A	Fast Food	83%	329	Blue Shield of California	Health Plans	47%
4	Regal	Banks	82%	329	Comcast	TV/ISP	47%
4	Hardees	Fast Food	82%	327	Medicaid	Health Plans	48%
4	Chipotle Mexican Grill	Fast Food	82%	327	Time Warner Cable	TV/ISP	48%
4	Hannaford	Supermarkets	82%	326	Spirit Airlines	Airlines	50%
8	Subway	Fast Food	81%	325	Cox Comm.	TV/ISP	51%
8	QVC	Retailers	81%	322	BCBS of Florida	Health Plans	53%
8	BJ's Wholesale Club	Retailers	81%	322	Aetna	Health Plans	53%
8	Ace Hardware	Retailers	81%	322	Anthem	Health Plans	53%
8	Food Lion	Supermarkets	81%	320	Days Inn	Hotels/Rooms	54%
8	Trader Joe's	Supermarkets	81%	320	Avis	Rental Cars & Transport	54%
14	KFC	Fast Food	80%	318	Blackboard	Software Firms	55%
14	Arby's	Fast Food	80%	318	Cablevision	TV/ISP	55%
14	Sam's Club	Retailers	80%	316	Airbnb	Hotels/Rooms	56%
14	Winn-Dixie	Supermarkets	80%	316	AT&T	TV/ISP	56%
14	Save-a-Lot	Supermarkets	80%	314	Motel 6	Hotels/Rooms	57%
14	Wegmans	Supermarkets	80%	314	Verizon	TV/ISP	57%
14	Kroger	Supermarkets	80%				
14	AmazonFresh	Supermarkets	80%				

Source: Patients' Perspective on Healthcare in the U.S., 2016. <http://www.npr.org/assets/img/2016/02/26/PatientPerspectives.pdf>

Source: <https://temkingroup.com/research-reports/2017-temkin-experience-ratings/>

FIGURE 90 | PATIENT BEHAVIORS CRITICAL TO HEALTH OUTCOMES

PROPORTIONAL CONTRIBUTION TO PREMATURE DEATH



Source: Schroeder. *We Can Do Better*. NEJM 2007;357:1221-1228, Figure 1 adapted from McGinnis, et al. *The Case for More Active Health Policy Attention to Health Promotion*. Health Affairs 2002; 21:78-93; and CDC, National Health and Nutrition Examination Surveys (NHANES); Pharmacy Solutions LLC from American Heart Association, 2009 <http://www.pharmsolutions.org/Pages/MedicationAdherence.aspx>

Patient engagement has been defined “as a concept that combines a patient’s knowledge, skills, ability, and willingness to manage his own health and care with interventions designed to increase activation and promote positive patient behavior.”¹³³ *Patient engagement is critical, as behavioral (lifestyle) patterns and social circumstances represent 40 percent and 15 percent, respectively, of the contributors to premature death.*

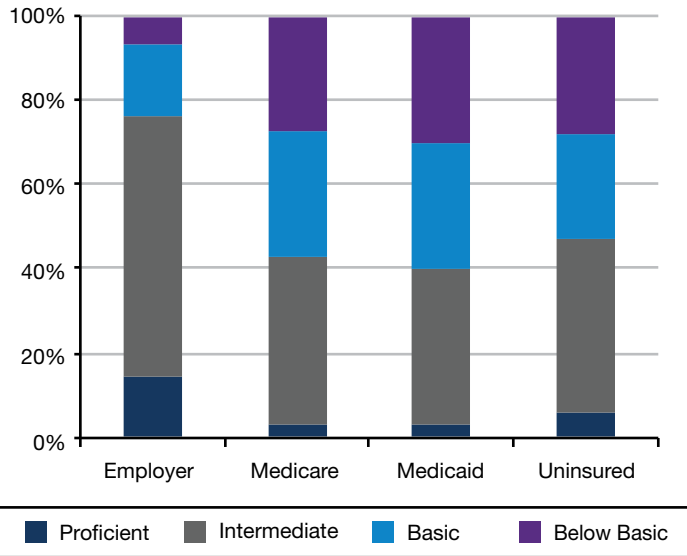
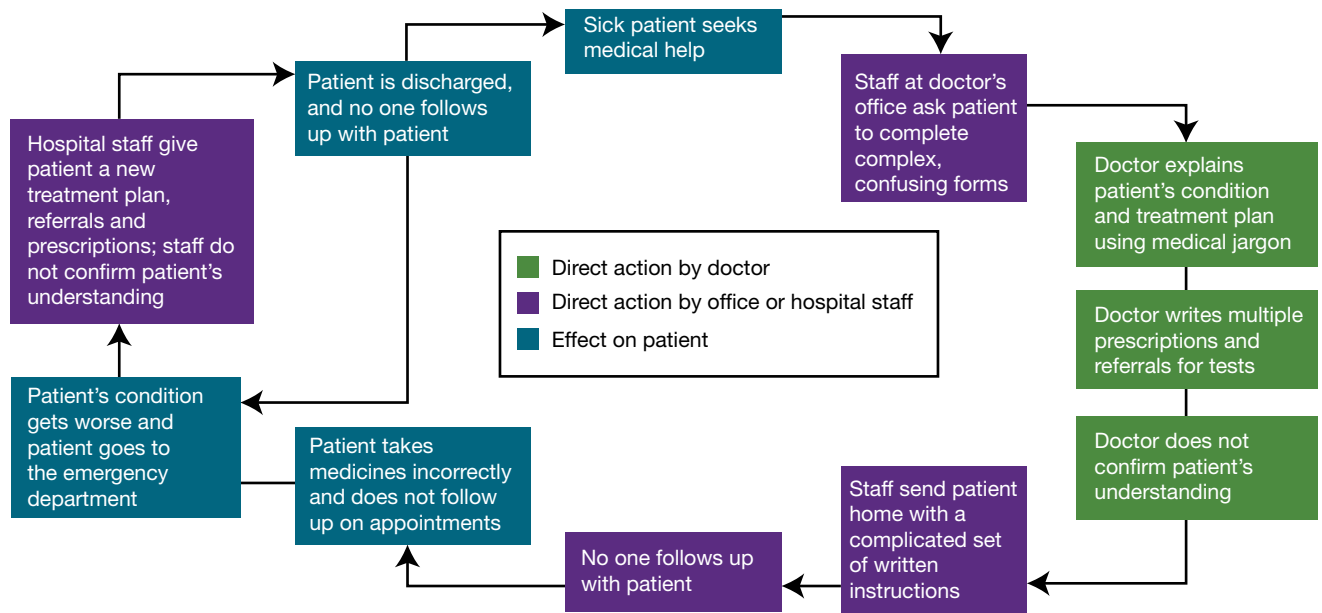
The decline in smoking can be attributed to widespread dissemination of information regarding health risks, restrictions on advertising and smoking in public areas, availability of smoking cessation programs, changes in social norms and higher costs (driven by taxes).¹³⁴ Patient activation and engagement increased substantially, resulting in behavior change, i.e., smoking cessation. Since 1991, the incidence of lung cancer has declined by 24

percent,¹³⁵ whereas the age-adjusted prevalence of COPD remains unchanged for chronic bronchitis and is higher for emphysema, most likely due to residual effects.¹³⁶

According to Angela Coulter, a recognized expert in patient-centered care, the primary pillars of patient engagement include:

- Improving the process of care as reflected by patient experience and satisfaction
- Improving health literacy, i.e., “the ability to obtain, process, and understand basic health information and services to make appropriate health decisions”¹³⁷
- Sustained shared (patient-provider) decision-making

FIGURE 91 | PATIENT'S NEGATIVE EXPERIENCE OF CARE



HEALTH LITERACY LEVEL	TASK EXAMPLES	PERCENTAGE OF ADULTS
Proficient	Using a table, calculate an employee's share of health insurance costs for a year	12%
Intermediate	Read instructions on a prescription label, and determine what time a person can take medication	53%
Basic	Read pamphlet and give two reasons a person with no symptoms should be tested for a disease	21%
Below Basic	Read a set of short instructions and identify what is permissible to drink before a medical test	14%

Sources: Koh H K et al. *Health Affairs* 2012;31:434-443; U.S. Department of Education, Institute of Education Sciences, 2003 *National Assessment of Adult Literacy*; HHS Office of Disease Prevention and Health Promotion. *America's Health Literacy: Why We Need Accessible Health Information* <http://www.health.gov/communication/literacy/issuebrief/>

Patient engagement requires self-management and supportive provider and/or payer interventions. Patients (and their caregivers) are active participants in optimizing their own care, inclusive of changes in lifestyle, treatment (drug) adherence, condition monitoring and intervention.

Behavior change is essential to patient engagement. Alternative models focused on the individual and/or individual interactions with people and their environment have been identified. At least three to six months is required for effective behavior change, with potentially another six to 18 months required for sustainability.

FIGURE 92 | REQUIREMENTS FOR PATIENT ENGAGEMENT

<p>BACKGROUND</p> <ul style="list-style-type: none"> • Clinicians are present for only a fraction of the patient’s life • Motivation is not enough. People also need self-confidence and certain skills that can be modelled and taught • Nearly all outcomes are mediated through the patient’s behavior <hr/> <p>SELF-MANAGEMENT [SYSTEM] SUPPORT</p> <p>The systematic provision of education and supportive interventions by health care staff to increase patient skills and confidence in managing their health problems, including regular assessment of progress and problems, goal setting and problem-solving support (Institute of Medicine)</p>	<p>ACCORDING TO AHRQ, PATIENTS MAY BE ASKED TO:</p> <ul style="list-style-type: none"> • Actively share in decision making • Change lifestyle to promote health • Adhere to a treatment plan, including medication regimens • Make office visits for lab tests, physical exams and clinical consultations • Closely monitor signs and symptoms • Respond with appropriate actions, as appropriate: <ul style="list-style-type: none"> - Adjust medications - Call a provider; e.g., nurse - Schedule telehealth session - Schedule MD visits
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FIGURE 93 | MODELS OF BEHAVIOR CHANGE



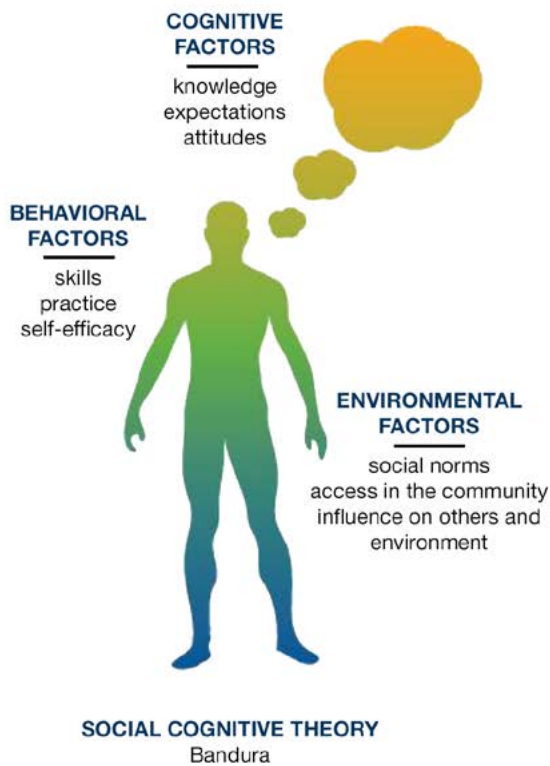
Source: Mittler, Jessica N., et al. "Making Sense of "Consumer Engagement" Initiatives to Improve Health and Health Care: A Conceptual Framework to Guide Policy and Practice." *Milbank Quarterly* 91.1 (2013): 37-77.

The importance of environmental factors such as social norms as a change agent cannot be understated. The New England Journal of Medicine published an article in July 2007 in which the investigators “examined several aspects of the spread of obesity, including the existence of clusters of obese persons within the [social] network, the association between one person’s weight gain and weight gain among his or her social contacts, the dependence of this association on the nature of the social ties (e.g., ties between friends of different kinds, siblings, spouses, and neighbors), and the influence of sex, smoking behavior, and geographic distance between the domiciles of persons in the social network.”¹³⁸ The study suggested “that obesity may spread in social networks in a quantifiable and discernable pattern that depends on the nature of social ties [more than geographic proximity].” The risk of obesity appears to decrease with each degree of social separation,

assuming an equal prevalence of obesity, i.e., one degree of separation (close family, friends and peers): 45 percent; two degrees of separation: 25 percent; three degrees: 10 percent; and four degrees: none.

Recognition of behavioral change as a complex process requires a fundamental paradigm shift in the provider approach to patient interaction from “push” to “pull.” The change is particularly applicable to the 5–10 percent of patients accounting for 43–68 percent of costs. Unidirectional and infrequent contacts need to be replaced with bidirectional and frequent contacts focused on development, self- management and caregiver support skills. The availability of EMR consumer portals, combined with advent of digital media and enabling technology, facilitates the generation of a lower-cost “pull” approach to whole person care delivery.

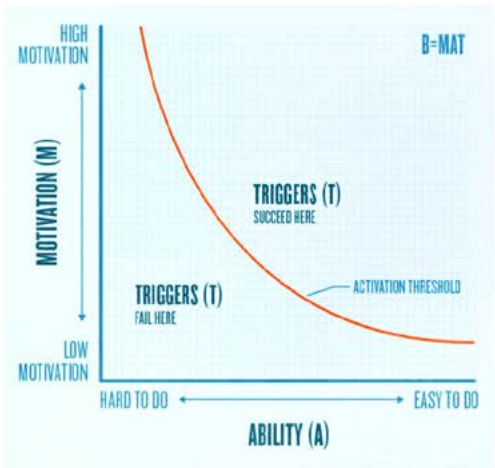
FIGURE 94 | COMMON FACTORS TO BEHAVIORAL HEALTH MODELS



WHAT CAUSES BEHAVIORAL CHANGE?

The Fogg Behavior Model (FBM) shows that three elements must converge at the same moment for a behavior to occur: Motivation, Ability and Trigger (MAT). When a behavior does not occur, at least one of the three elements is missing.

THE FOGG BEHAVIOR MODEL



BEHAVIOR CHANGE ELEMENTS

- 
MOTIVATION
- 
ABILITY
- 
TRIGGER

CORE MOTIVATORS

- 
TIME
- 
MONEY
- 
EFFORT
- 
CYCLES
- 
DEVIANCE
- 
ROUTINE

SIMPLICITY FACTORS

- 
FACILITATOR
- 
SPARK
- 
SIGNAL

Sources: <http://hl250wt2014.weebly.com/key-points.html>; and <http://www.behaviormodel.org/>

FIGURE 95 | PATIENT ENGAGEMENT EXPLAINED

“**Are you buying momentary attention or are you investing in a long term asset? Stop renting an audience - build one.**”
 Seth Godin,
 best-selling author

PARADIGM SHIFT

- Old Communications Models: one-way messages, brand dictates topics, infrequent distribution, no feedback, brand finds the audience (push)
- New Communications Model: two-way dialogue, patients dictate the topics, frequent distribution, continual feedback, audience finds the brand (pull)

PASSIVE PATIENT MANAGEMENT (PUSH)

- Unidirectional instructions
- Limited provider access
- Infrequent contact (“touch points”)
- Negative or indifferent experience of care

PATIENT ENGAGEMENT (PULL)

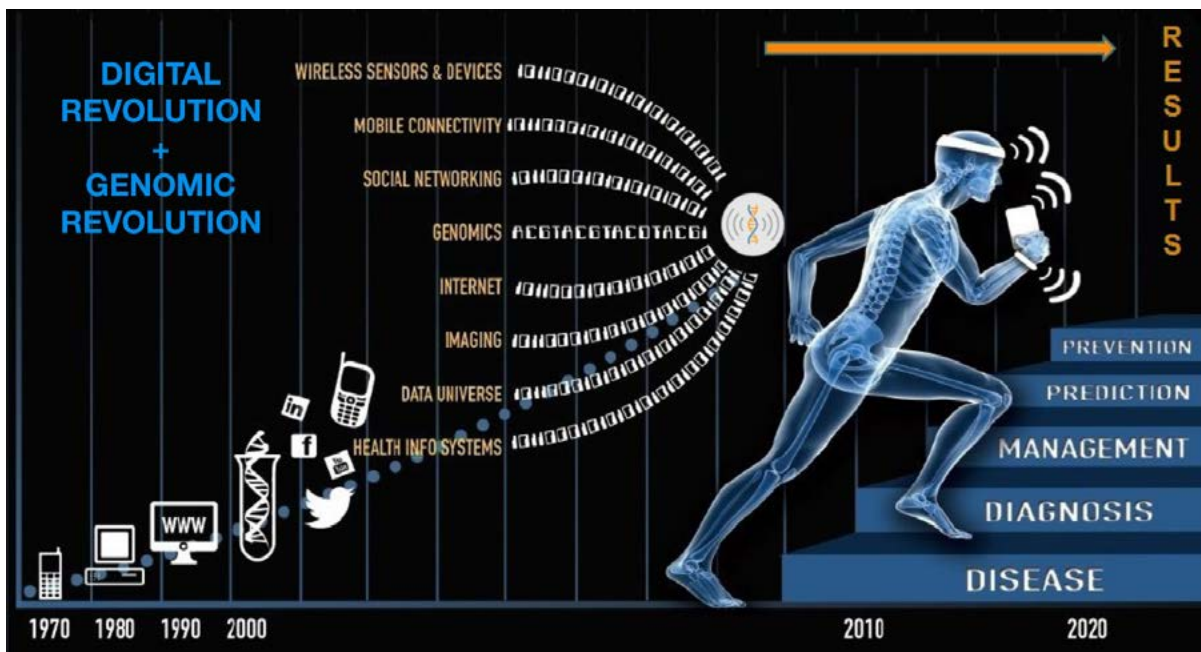
- Bidirectional discussion (shared decision making)
- Cultural sensitivity (race/ethnicity) and persona-aware; i.e., treat patient as an individual
- Increased provider access
- Supportive and frequent contacts
 - Personal communications
 - Digital media with relevant content
- Use of enabling technology
- Positive experience of care (builds trust)
- Inclusion of caregiver

Source: *Engagement Marketing: Finding, Connecting Converting Profitable Buyers.* <https://www.slideshare.net/stevepattiCMO/healthcare-marketing-strategy-basics>

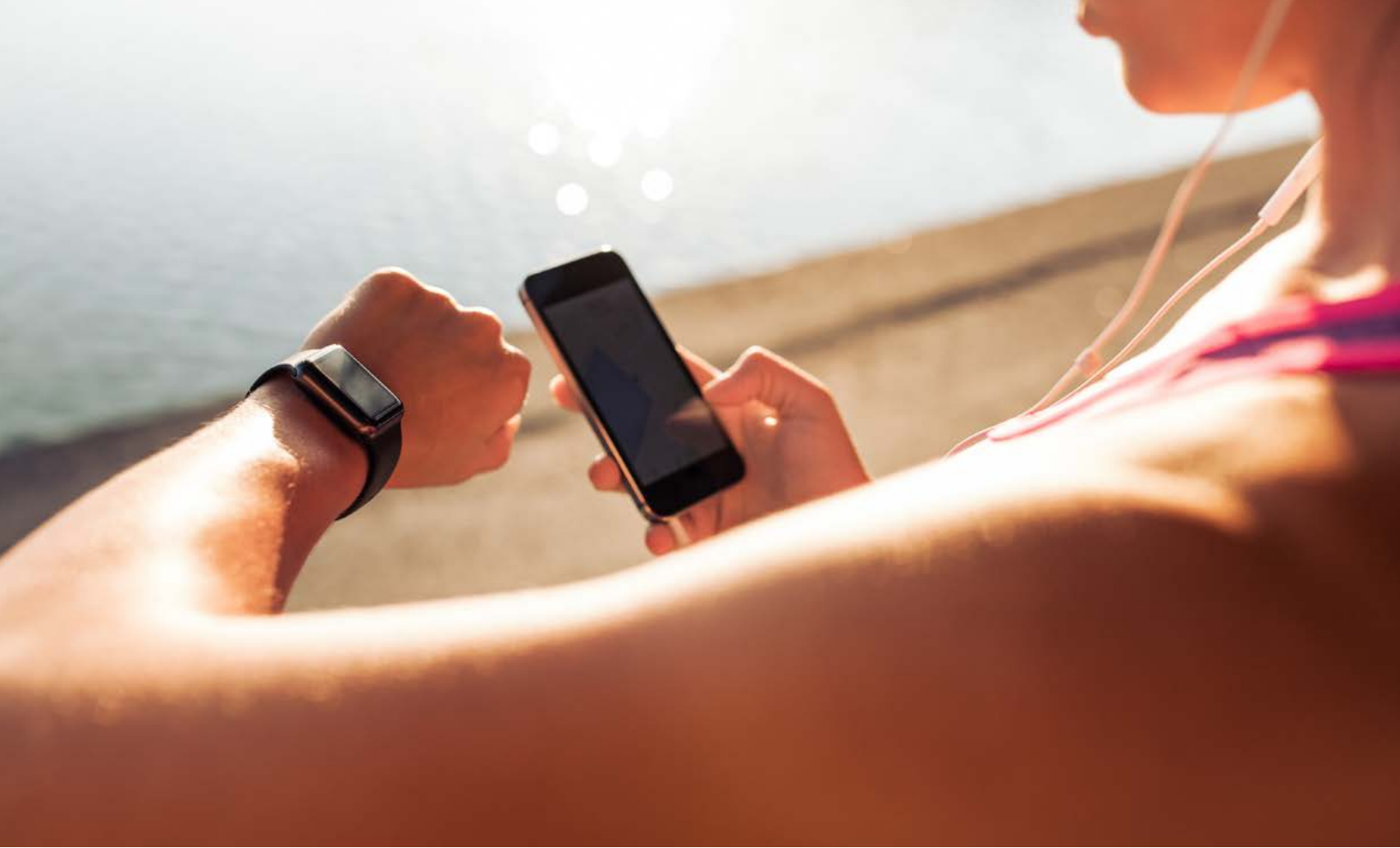
Digital health has emerged from the convergence of healthcare with computer, internet, mobile, wireless and sensor technology to enable patient monitoring, access, communication and intervention. A fee-for-service reimbursement environment has not been supportive

of digital health due to its focus on incremental costs and not the total cost of care; a value-based, at-risk ecosystem would consider evidence-based digital health technologies attractive.

FIGURE 96 | THE DIGITAL HEALTH REVOLUTION



Source: Infographic by Paul Sonnier; www.storyofdigitalhealth.com



Many consumer applications have been focused on the health and wellness segment. A study published by RAND Corporation highlighted disappointing results (or lack thereof) from a formal assessment of employer-based programs. From the direct-to-consumer perspective, a significant market has emerged for wearable fitness trackers and, to a far lesser extent, smartwatches; approximately 12 percent of Americans own a device.¹³⁹

Digital applications for medical education, condition-specific social networking and support, disease and medication management, genetic screening, price transparency, provider (physician) search and other areas have emerged and offer consumers an opportunity to increase their engagement.

Remote monitoring technology includes devices to measure vital signs (heart rate, respiratory rate, blood pressure), blood glucose (diabetes), blood oxygen, weight (fluid retention in congestive heart failure) and other parameters. The “early detection” data can be used by the patient and/or caregiver, and/or be sent to a service provider for exception reporting. They can also be used to allow older and disabled people or, even more recently, very ill patients to avoid transfer to a skilled nursing facility or hospital.

Telehealth potentially offers consumers access and convenience, whereas providers can triage patients based on actual clinical need for a visit. If necessary, a nurse can make a home visit to a patient and use electronic instruments to transmit vital signs, heart and lung sounds, images and other details to primary care and/or specialist physicians.

Smart home sensor technology is being used for automated response to changes in motion and/or position (falls), as well as to monitor changes in physical activity, bathroom habits, sleep patterns and medication adherence. Oftentimes, an engaged caregiver is involved in the decision to use these technologies.

Despite a theoretical understanding of behavioral change, the availability of digital health tools and growing recognition of the importance of self-management, many providers have not been successful in increasing patient engagement. A patient-centric “pull” approach to care delivery has not yet been institutionalized. Increasing unaffordability represents another barrier to patient engagement. As former Surgeon General Everett Koop stated, “Drugs don’t work in patients who don’t take them.”⁹

FIGURE 97 | RAND WORKPLACE WELLNESS PROGRAMS STUDY

Over the last several decades, an epidemic of “lifestyle diseases” has developed in the United States: Unhealthy lifestyles, such as inactivity, poor nutrition, tobacco use and frequent alcohol consumption are driving up the prevalence of chronic disease, such as diabetes, heart disease, and chronic pulmonary condition.

Out of concern about the impact of chronic disease on employee health and well-being, the cost of health care coverage, and competitiveness, employers are adopting health promotion and disease prevention strategies, commonly referred to as workplace wellness programs.

“ Only about half [of surveyed employees] stated that they have evaluated program impacts formally and only 2 percent reported actual savings estimates. ”

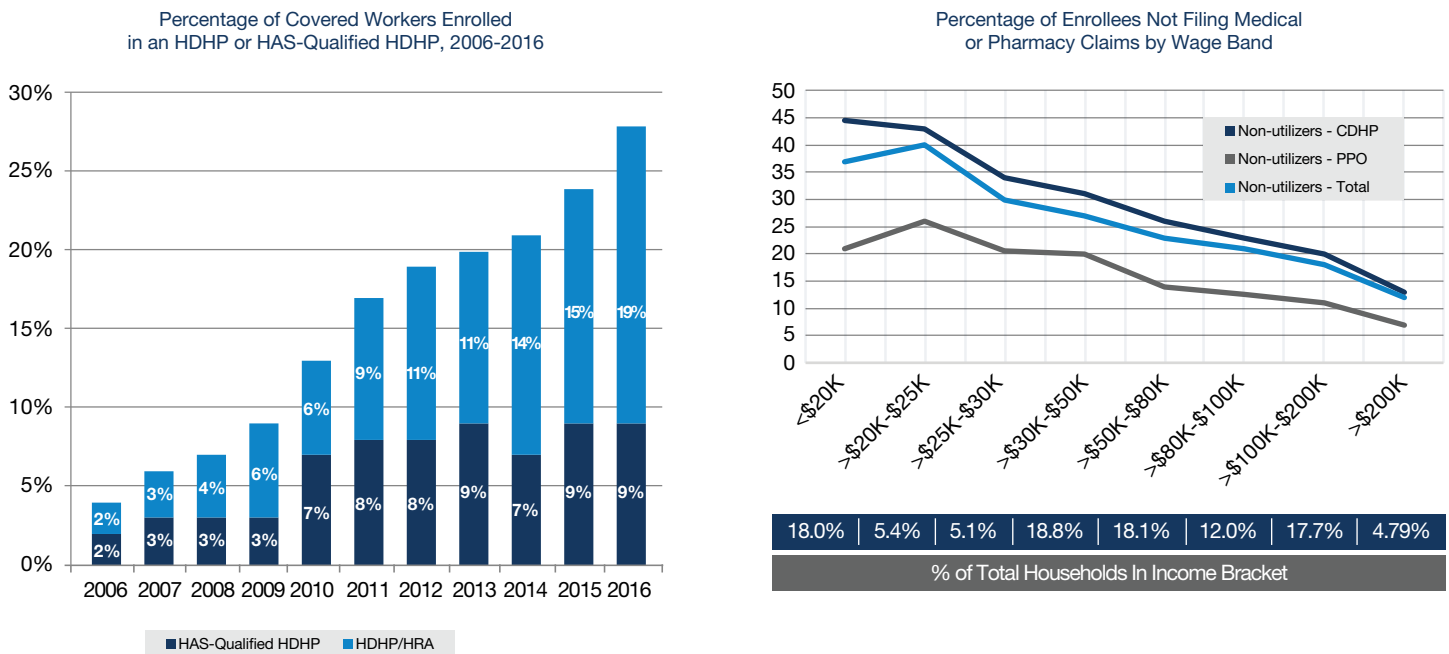
“ We estimate the average annual difference to be \$157, but the change is not statistically significant. ”

Workplace wellness takes advantage of employers’ access to employees at an age when interventions can still change their long-term health trajectory.

In the RAND Employer Survey, employers overwhelmingly expressed confidence that workplace wellness programs reduce medical cost, absenteeism and health-related productivity losses. But at the same time, only about half stated that they have evaluated program impacts formally and only 2 percent reported actual savings estimates. Similarly, none of our five case study employers had conducted a formal evaluation of their programs on cost; only one employer had requested an assessment of cost trends from its health plan. Our statistical analyses suggest that participation in a wellness program over five years is associated with a trend toward lower health care costs and decreasing health care use. We estimate the average annual difference to be \$157, but the change is not statistically significant.

*Examples include Stanford Patient Education Research Center Chronic Disease Self-Management Programs (CDSMP); University of Pittsburgh Diabetes Prevention Program (DPP)

FIGURE 98 | IMPACT OF COST SHIFTING



Source: MGMA, 2016

A photograph of two men in white lab coats standing in a modern, multi-story hospital hallway. They are facing each other and appear to be in conversation. The hallway has a clean, architectural design with white walls and glass railings on the upper levels. The lighting is bright and even. The overall color palette is dominated by light blues and whites, giving it a professional and clinical feel.

SUGGESTED NEXT STEPS

The healthcare industry has evolved and will continue to do so, though at an accelerating rate. Rising costs, increased coverage, aging demographics, declining affordability and consolidation have altered industry fundamentals on a market-by-market basis. The formation of health systems has significantly altered the competitive landscape. Balancing fee-for-service with value-based business models during the ongoing transition period represents a challenge to all.

The ability of providers to navigate a pathway to longer-term success requires an assessment of current business efficiency (costs) and effectiveness (outcomes) against the emerging care delivery ecosystem. It requires a determination of relative competitive position. It requires actionable data, information and insights. It also requires both, strategic leadership and effective tactical execution.

A spectrum of provider structural alternatives exists: community provider, hospital / health system, vertical integration across the continuum, accountable care organization, member of a joint venture delivery system with a payer, or becoming a payer. Each alternative presents business risk; sustainability requires a periodic assessment of emerging scenarios and capabilities against strategic and financial investment decisions to ensure directional appropriateness based on local market, reimbursement and regulatory dynamics. Adjustments, preferably incremental, are likely required.

Despite the modicum of uncertainty, change is inevitable. Timing the change will vary by market. Providers could be proactive innovators or early adopters, or be reactive, late majority adopters or laggards. Proactive innovators and early adopters have the benefit of smaller scale pilot initiatives and the possibility of agile development, i.e., iterative and incremental improvements. They can also proactively target cost and quality performance improvement initiatives. A competitive advantage may emerge, allowing for lower-cost care delivery, more favorable payer contracts and gains in market share.

Late majority adopters or laggards may be unable to complete the required business model transformation in a compressed period of time. Lost market share disproportionately affects operating margins in a high fixed cost, labor-driven business environment.

Unlike the many false starts of the past, A&M believes that the magnitude of healthcare transformation may eventually be as significant as those in other industries such as media, telecommunications, consumer financial services and retail. A projected \$2 trillion increase in healthcare expenditures in 2017–25 is not sustainable, nor affordable!

The emerging ecosystem requires core strategic decisions on factors such as geographic footprint, size of organization, degree of vertical and/or horizontal integration, scope of services, IT and analytic infrastructure, capabilities and access to capital. Efficient operational and effective clinical execution are necessary. Risk management focus is shifting from the traditional enterprise approach to the implications of payment reform from fee-for-service to value. Not all organizations share the same risk tolerance.

Implementing alternative payment models requires collaboration and transparency among providers, payers and related healthcare entities. Bundled payments, value-based payments, pay for performance and other similar models are based upon the delivery of a continuum of services for a fixed price. The need for increased collaboration increases the need for the consumption of information. Providers must have access to population- and patient-specific information to scale services, develop care protocols and negotiate contracts ensuring appropriate reimbursement. Providers can either (a) develop the necessary back office functions in-house or (b) contract with a third-party vendor to provide the requisite services.

Traditional referral patterns are changing, with brand equity and outreach increasing in relative importance. Patients, increasingly referred to as consumers, now have access to provider cost and quality information — the former increasingly important as out-of-pocket costs continue their inexorable rise. Payers have formed narrow provider networks based on cost information. In August 2017, Anthem halted coverage of outpatient MRIs and CT scans at hospitals in favor of lower-cost alternative freestanding facilities.¹⁴⁰ *Performance improvement represents a strategic imperative to reduce costs (clinical and non-clinical, direct and indirect labor, supplies).*



Patient market share (volume) represents a strategic imperative for provider success. As global payment and pay for performance models evolve, member volume mitigates high-risk pools, informs care standards and interventions that enhance outcomes, and provides statistically significant patient cohort, episode of care, provider variation and resource utilization analytics. Large data sets need to be analyzed and understood — not just to account for revenue, but to understand clinical drivers of cost and quality.

Healthcare analytics represents a core capability to augment finance and accounting activities, enhance the process of care, reduce provider variation and increase patient engagement. Analysis of resource utilization for all services received by a patient informs clinical protocols, empowers care coordination strategies and treatments, enables the negotiation of sound global payment levels, and monitors performance against contractual obligations and expectations. Aggregation of data, the ability to draw insights and the exchange of data require knowledge about data warehouse architecture, technology interfaces and reporting requirements demanded by payers and regulators.



Care coordination and navigation require care integration, education, outreach and monitoring throughout the continuum with focus on higher-cost and/or higher-risk populations. Information systems and tools enable patient population management, inclusive of social determinants. The ability to collaborate and contract with post-acute care and community-based providers represents a core function and affects the total cost of care. Understanding resource alternatives, the role of technology and determinants of cost-effectiveness (return on investment) are also important capabilities.

Government policy mandates and payers will continue to orchestrate the many business functions that surround the provision of benefits and services. Providers will continue to be challenged to accept delegation of healthcare functions and, therefore, risk for premium dollars and administrative cost. Continuing success and profitability in an evolving healthcare landscape will require the periodic assessment and refinement of business initiatives (and related capabilities).

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AUTHOR'S BIOGRAPHY

David Gruber, MD, MBA, is a Managing Director and the Director of Research with Alvarez & Marsal's Healthcare Industry Group in New York, specializing in strategy, commercial due diligence, analytics, new ventures and health benefits. Dr. Gruber brings 32 years of diversified healthcare experience as a consultant, corporate executive, Wall Street analyst and physician.

Dr. Gruber's A&M publications include: Getting (Much) Closer to the Cost Precipice; Safety Net Hospitals at Risk: Re-thinking the Business Model; Behavioral Health: Key to Chronic Disease Costs; Healthcare: Economic Value Need Not Apply (Yet); and Post-Acute Care: Disruption (and Opportunities) Lurking Beneath the Surface.

Before joining A&M, he spent three years as the Founder of Healthcare Convergence Associates, a consulting firm focused on the convergence of healthcare, technology and the consumer. His initiatives included wireless and tele-health opportunities, chronic obstructive pulmonary disease (COPD) technology assessment, pharmacy benefit management (PBM) diabetes innovation, and retail health and wellness. He was also involved in three healthcare-related information technology (IT) start-ups.

Until 2008, Dr. Gruber was Vice President of Corporate Development and New Ventures with the Johnson & Johnson Consumer Group of Companies. His primary focus was in dermatology / aesthetics, consumer engagement and wireless health across the company. From 1995 to 2004, he worked on Wall Street as a top-ten rated medical supplies and devices analyst at Lehman Brothers, Piper Jaffray and Sanford Bernstein. He was the lead analyst for the initial public offering of Intuitive Surgical (robotics) and Given Imaging, and a merchant banking investment in Therasense.

Prior to entering Wall Street, Dr. Gruber was Vice President of Planning and Business Development for the \$1.6 billion healthcare group at Bristol-Myers that included Zimmer, ConvaTec, Linvatec and Xomed-Treace. While at Bristol-Myers, he represented the company with the Health Industry Manufacturing Association (HIMA) as it deliberated the merits of Hillary Clinton's healthcare reform proposals.

Dr. Gruber has recently appeared on NPR and C-Span; was quoted in the Washington Post, Los Angeles Times, The Deal, Healthcare Finance News, Managed Care Executive, Managed Care Outlook, Becker's Hospital Review and Inside Health Policy; and was published in the Journal of Diabetes Science & Technology, Turnaround Management Association Newsletter of Corporate Renewal and American Bankruptcy Institute Journal.

Dr. Gruber is a magna cum laude graduate of a six-year BS-MD program, having earned a bachelor's degree from the Sophie Davis School of Biomedical Education, CCNY in 1981 and a medical degree from the Mt. Sinai School of Medicine in 1983. He also has an MBA from Columbia University and was a Kellogg Foundation National Fellow. Dr. Gruber is currently a Senior Fellow, Healthcare Innovation and Technology Lab (HITLAB) at Columbia Presbyterian. He is a re-elected Trustee to the Teaneck Board of Education.



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