

**Measurement and Performance
Health Care Quality and Efficiency:
Resources for Health Care Professionals**
From Measurement to Improved Performance
Third Update

Sponsored by
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Introduction to Updated Report

Since the initial report was produced, major changes are underway in the health industry. Many initiatives have moved beyond measurement to begin substantial performance improvement, improve the fragmented health system, and create financial incentives that Pay-for-Value. These initiatives already impact millions of people. The third update of this report reflects this ongoing transformation, new measurement approaches, and new pilots and other initiatives in the public and private sectors.

Strong measurement is needed to meet the “three-part-aim” presented by many thought leaders nationally. The goals are:

1. Better care for individuals
2. Better health for populations
3. Lower growth in expenditures

Historically, the health industry had only made slow and incremental progress on measurement and performance improvement. A combination of forces has greatly increased the pace of activity. The result is over a thousand initiatives. As one example, Leavitt Partners estimates 428 accountable care organizations (ACOs) exist in the United States. “ACOs have expanded dramatically, more than doubling in number since the start of 2011,” according to a press release.¹

Early adopters are moving beyond measurement toward action—to reform the delivery system and create pay-for-value (beyond historic fee-for-service) models. There is action in all major lines-of-business.

- **Federal:** The health reform statute, the Patient Protection and Affordable Care Act (ACA), creates extensive changes in direction for Medicare and Medicaid. Much of the attention has focused on the first two titles of the act. However, the extensive Title III includes many new measurements and value-based purchasing programs such as readmission reduction. The act also gives authority to the Centers for Medicare and Medicaid Services (CMS) to test and expand successful pilot programs into broader initiatives. Many providers are voluntarily participating in new federal initiatives (see section 5.1.2).
- **State:** Many Medicaid changes are being proposed and implemented as the state level, including major waivers, quality initiatives, patient-centered medical homes (PCMHs), bundled payments and primary care physician payment reform. This material has been added to sections 5.1.3 and 6.
- **Private sector:** Measurement and provider-based initiatives continue to be refined and expanded. This includes stronger approaches to pay-for-performance, complication

¹ NGST Media Group, “Accountable Care Organizations Have More Than Doubled Since 2011,” Leavitt Partners’ ACO Consulting (blog), Feb. 20, 2013, <http://leavittpartners.com/2013/02/accountable-care-organizations-have-more-than-doubled-since-2011/>.

reduction, high-performing networks including ACOs and PCMHs, and major technical advancements in quality and efficiency measurement (section 5.1.4).

- **Clinical/academic:** Basic quality measures are much more widely available with stronger support through financial incentives and health information technology. CMS, AHRQ, various states and local communities, and carriers provide easy access to web information. More reports show actual results for specific hospitals, physician groups or physicians, and these are being tied to incentives such as value-based payment programs.
- **Provider level:** Many early-adopter providers (hospitals, physicians, staff, etc.) are highly engaged in programs for their own employees or through outside buyer partners. Section 5.1.5 has been added to highlight their involvement.

We have also expanded content. The original report did not deal with population health and high-risk patient identification. Given the increased direct-provider engagement in risk adjustment, population health and the identification of high-risk members, we have added section 5.6.

Given all the new pilots and initiatives, we have extensively updated and renamed section 6 on initiatives. This section summarizes the fundamental principles and common framework for the many new public and private initiatives. This report also expands the inventory (Appendix D) and now includes more than 100 programs and organizations.² Each entry includes links to specific material on the groups' websites.

² The inventory is challenging to maintain given the many rapidly changing initiatives underway. We have added entries for major new programs; however, we have made only a few changes to previous entries, since many long-standing core organizations and their leaders remain committed to their initiatives. In most cases, the links have been updated, but the original written summaries of the programs are unchanged. As a result, summaries in Appendix D were created over a wide range of time.

How to Use This Report and Appendix D

Health care—a fast-moving industry—comprises one-sixth of the U.S. economy. And there are many ways to measure quality and efficiency in the health care industry. This report and related appendices uses a two-part approach to organizing this vast material. The first part is the report itself; an overview of the state of measurement in the industry. The second part contains detailed descriptions of any particular program. These are found in an extensive inventory (Appendix D). This inventory has a two- to four-page summary of more than 100 major organizations and programs.

- If you want an overview on a particular topic, look at the table of contents for the report.
- If you want a description of particular organization or program, look at the table of contents for Appendix D. This includes hyperlinks.
- If you want examples of major interesting applications (such as ACOs, collaborative programs, or new payment options), read section 6.

Table of Contents

Introduction to Updated Report
How to Use This Report and Appendix D

1. Executive Summary
 - 1.1 Transformation of Health Care Quality and Efficiency Measurement
2. Report Structure
 - 2.1. Organization of the Report
 - 2.1.1. Sections
 - 2.1.2. Appendices
 - 2.1.3. Overview of Appendix D
 - 2.2. Research Methodology
 - 2.3. Inventory
3. Limitations and Measurement Challenges
 - 3.1. Environment: Large, Decentralized and Complex System
 - 3.1.1. Health System Stakeholders: Purchasers
 - 3.1.2. Decentralized Health Care Systems
 - 3.1.3. Misalignment of Payment (In Current Fee-For-Service Structure)
 - 3.2. Definition of Quality
 - 3.3. Different Approaches to Measurement
 - 3.4. Implications of Diverse Stakeholders, Goals and Perspectives
 - 3.5. Implications of the Rapid Pace of Change
4. Importance of Measuring Quality and Effectiveness
 - 4.1. Varying Approaches to Measuring Health Care Quality and Efficiency
 - 4.2. Quality Measurement
 - 4.3. Importance of Efficiency Measures
 - 4.4. Innovations in Efficiency Measurement
 - 4.5. Challenges to Efficiency Measurement Across Populations
5. Overview of Stakeholders and Organizations
 - 5.1. Organizations with a Broad Role
 - 5.1.1. National Organizations that Develop and Approve Measures
 - 5.1.2. Centers for Medicare and Medicaid (CMS)
 - 5.1.3. State Programs (Medicaid and Private Sector)
 - 5.1.4. Insurance Carriers
 - 5.1.5. Providers
 - 5.1.6. International
 - 5.2. Hospital Quality
 - 5.3. Hospital Efficiency and Resource Use
 - 5.4. Outpatient/Physician Quality
 - 5.5. Physician Efficiency and Resource Use
 - 5.6. Population Health Measurement and Illness Prediction
 - 5.7. Other

6. Initiatives (Payment and System Reform)

6.1. Fundamental Principles

6.1.1 Who Should Act?

6.1.2. How Should Providers Be Paid?

6.1.3. How Should System and Payment Reform Be Linked?

6.2. Real-Life Initiatives: Examples

7. Future Research Implications

8. Summary

Appendices

A. Definitions of Categories for Programs in Data Inventory

B. Institute of Medicine (IOM) Definition of Quality

C. Other Resources

D. Inventory of Programs and Organizations (a stand-alone PDF)

E. Links to Specific Measures

1. Executive Summary

Economic forces continue to challenge the existing system - affordability remains a major goal and problem. At the same time, there are other substantive environmental forces, technology opportunities, and major legislation. The combination is driving a rapid transformation of the health care industry. With this in mind, the Society of Actuaries Health Section has done a third update to this research report. This report reviews and inventories the wide range of quality and efficiency measures and related initiatives currently available.

Health care quality and efficiency are important for both the overall economy and health care consumers. Affordable health care is crucial to the financial stability of many workers and retirees. Moreover, quality and efficiency occupy a prominent position in the health care system reform effort. These efforts focus on fundamental issues in the United States, such as the decentralized nature of the health care system, often poorly aligned payment structures and the complexity of roles assumed by service providers.

The health care reform legislation, the Patient Protection and Affordable Care Act (ACA) of 2010,³ continues to reinforce private sector action. The legislation makes major changes related to measurement, health systems integration and payment reform, and encourages standardization. In addition, there is substantial federal support for investments in technology for physicians and patients. This greatly changes the short- and long-term landscapes in the health industry. Elements of the act connect directly to measurement, quality, efficiency and accountability.

The objective of this report is to serve as a resource on quality and efficiency measures that demonstrate the performance of hospitals and physicians. Besides outlining key elements of such measurements, this report describes opportunities for actuaries and other health professionals interested in this evolving area.

This report has two major components. The first, the report itself, offers an overview of the many concepts and programs. It is not an in-depth discussion of any particular topic; it is an overview of all topics. Deeper material is in the second component, a substantive Inventory of more than 100 programs. This is available as a separate attachment (Appendix D).

1.1. Transformation of Health Care Quality and Efficiency Measurement

The health care industry is undergoing an extensive transformation based on major changes in the environment and the ongoing cost of health care for buyers. State budgets are tight. Medicare takes an increasing portion of the federal budget. Individual buyers are seeing lower benefits at the same time as premiums and contributions rise (even with premiums offset by employer subsidies). Costs continue to increase much faster than inflation. There is increasing energy to move to a pay-for-value health system and align payment programs across various buyers.

³ The Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148, 124 Stat. 119 (2010), <http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf>.

However, these changes must move through a vast and diverse health care industry.

Historically, the industry has been challenged by data limitations, including inconsistency, poor timeliness and lack of robust methodologies. Also, incentives have been poorly designed. Consequently, efforts to measure quality and efficiency were often hindered and relegated to an expensive afterthought. The situation is changing.

Information systems resources, disease registries, electronic medical records (EMR) and data analytics are being implemented at a rapid pace. Measurement is now valued as an essential requirement for feedback and improvement.

At the same time, new technology, measurement approaches and other resources for gauging quality and effectiveness have emerged. Analysis is now far less expensive. Ready access to basic measures of quality is widely available from the Internet, and performance data has supported an explosion of activity in measurement of quality and effectiveness. Major industry players have recognized the need to measure and improve quality as well as apply new metrics to boost the analysis of the connection between specific illnesses and overall populations.

Over recent years, even the popular press has become involved in the discussion of quality and efficiency. For example, *The New Yorker* article “The Cost Conundrum: What a Texas Town Can Teach us About Health Care” by Dr. Atul Gawande remains fundamental.⁴ The article provides a perspective on measured differences in quality and efficiency across populations in different Texas cities for Medicare. *Health Affairs* shows an evaluation of results for these same cities for non-Medicare patients.⁵

Although the health care system remains complex, the underlying measurement capabilities continue to improve. The following are some examples of new developments.

- Increased collaboration and coordination across key industry players (reinforced by payment reform)
- Continued enhancements of hospital quality measures—more measures, in greater depth, from more locations, leading to improved results
- New evidence-based medicine metrics to measure physician quality
- Improved financial metrics such as episodes of care, complication measurement and member risk-adjustment
- New metrics to bridge the communication gap between the “macro” financial approach of purchasers and the “micro” individual focus of physicians and academic studies
- Expansion of diverse pay-for-performance (P4P) pilots and initiatives
- Many state or community pilots on payment reform, complication reduction, patient-centered medical homes (PCMHs) and accountable care organizations (ACOs)
- Pilot programs to reduce complications and readmission rates

⁴ Atul Gawande, “The Cost Conundrum: What a Texas Town Can Teach us About Health Care,” *The New Yorker*, June 1, 2009, http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande.

⁵ Luisa Franzini, Osama I. Mikhail and Jonathan S. Skinner, “McAllen and El Paso Revisited: Medicare Variations Not Always Reflected in the Under-Sixty Five Population,” *Health Affairs* 29, no. 12 (December 2010): 2302-09, doi:10.1377/hlthaff.2010.0492.

- Alternative networks available in major locations based on measured quality and/or efficiency

As with any industry, the combination of financial pressures and extensive new capabilities creates transformation and the potential for substantial improvements. This transformation is happening in the health system: payment incentives changes, provider leadership, visible industry consensus, new health information technology, far deeper analytics/metrics and wider data availability. This is outlined in *Health Watch* for May 2013.⁶

As this report and the accompanying Inventory demonstrate, these new developments will provide challenges but also a wealth of opportunities: improved measurement, stronger communications between stakeholders, earlier prediction of serious illnesses, care coordination, and better quality and resource use.

Early adopters in the public and private sector have created pilot programs in many states and they are moving quickly to implement these programs. There is a strong commitment to improve health and reduce costs/resource use. With this in mind, the authors hope the report will serve as a timely and valuable reference for health care professionals wishing to further enhance their knowledge and become involved in this growing area of health care. The Society of Actuaries Health Section has sponsored this effort to help actuaries and the public address these challenges with timely tools and techniques.

⁶ Greger Vigen, "Health Care 2.0—Massive Implications of System Transformation," *Health Watch* 72 (May 2013): 2, www.soa.org/Library/Newsletters/Health-Watch-Newsletter/2013/may/hsn-2013-iss72.pdf.

2. Report Structure

This report is organized into seven sections. In addition, there are six appendices, including an extensive one (Appendix D) that provides an Inventory of specific organizations and programs. It focuses on measurement of quality and efficiency processes and outcomes by hospitals and physicians for Medicare and/or commercially insured patients. Information from selected organizations and programs/products has been summarized in the Inventory. To keep the report to a manageable length, related topics such as re-engineering, patient satisfaction, chart reviews, comparative effectiveness and patient health improvements are not included. The report focuses on measures that can be applied to a specific provider. It also covers population-based measures like risk adjustment in Appendix D. The report limitations are discussed in more detail in section 3.

Different industry sectors have differing technical and business interests and viewpoints. The report does not attempt to reconcile those viewpoints.

2.1. Organization of the Report

2.1.1. Sections

1. Provides an executive summary of the report
2. Outlines the report structure, including research methodology
3. Summarizes the limitations of this study and challenges to measurement
4. Discusses the importance of quality and efficiency measurement topics
5. Summarizes the major categories of organizations included in this report; it also highlights new directions on these topics
6. Summarizes fundamental concepts and lists a few key initiatives as examples of how measurement is being applied to improve results
7. Outlines research implications and potential future studies
8. Summarizes key elements of the report

The report itself outlines many available resources. More detail is available in the appendices.

2.1.2. Appendices

- A. Defines categories for programs in Inventory
- B. Introduces the Institute of Medicine's definition of quality
- C. Lists other resources
- D. Inventories programs and organizations
- E. Includes links to specific measures
- F. Provides overview of sample initiatives

2.1.3. Overview of Appendix D (Inventory of Programs and Organizations)

Appendix D summarizes information from many organizations involved in quality and efficiency efforts. The material has been extracted from publicly available information on these organizations' websites and has been lightly edited for readability purposes. The report's authors did not validate or verify the accuracy of information on the websites.

The information contained in the Inventory does not reflect the opinions of the authors, the Society of Actuaries or Solucia Consulting, nor should the report be construed as an official statement or position of either organization.

Appendix D includes a two- to four-page summary of more than 100 major programs. Because of its size, Appendix D is available as a separate file on the Society of Actuaries web page, www.soa.org, housing this report.

2.2. Research Methodology

The search for material started in November 2008 and, in the course of various editions, has continued through early 2013.

The research methodology for the original and updated reports consisted of an iterative process, beginning with the identification of the websites of organizations involved in measurement and reporting of quality and efficiency. The initial search list of organizations, agencies, programs, products or measures covered was also guided by the expert opinion of the authors and Project Oversight Group.

It is by no means an exhaustive list but rather one intended to do a very broad review of programs focused on health care measurement and inventory a cross section of programs and organizations. Inclusion in the Inventory was driven by the primary focus of the measure or activity. Thus, the authors were particularly interested in identifying examples of physician quality and efficiency and hospital quality and efficiency. Rather than listing every state program and insurance carrier, the report presents a few examples that illustrate particularly interesting approaches, innovations or programs.

The depth of material available on the websites reviewed varied considerably. Some sites offered a comprehensive outline of measures, products or services with downloadable documentation such as technical specifications, white papers or peer-reviewed papers. Other websites offered primarily marketing or publicity materials with limited descriptive and technical detail. Access to key elements of some sites has been increasingly restricted to those who register on the site or members of the organization. Registered or restricted information is not included. For a few programs, where there was a dearth of information, supplemental Internet searches were undertaken to augment the materials.

As information about quality and efficiency measurement accumulated, the search fields were further narrowed. Because the research was conducted over a period of years, the websites of some organizations profiled in this report were revisited several times to ensure that the most current information was captured. Materials contained in the Inventory were directly

downloaded from the applicable sites and lightly edited for readability. Links are provided for all materials so that the reader may find any updated information of interest.

The report is intended as a basic inventory of programs. To keep this report to a manageable size, we have summarized selected programs/products, although to give the reader a sense of the overall scope of the subject matter, there are more than 200,000 citations on MEDLINE (Medical Literature Analysis and Retrieval System Online).

2.3. Inventory

The Inventory of groups/measures/products reviewed has been organized into Appendix D.

The effort of imposing some sort of order on the available material was akin to encouraging an octopus into a string bag—a highly challenging task! Several approaches to categorizing data were developed to make the information accessible to the user.

The following information is provided for most of the organizations/programs in the Inventory.

- **Summary:** An overall description of the organization or metric including background and descriptive information
- **Methodology:** An explanation of any particular procedure or set of procedures used in data collection and/or analysis, technical specifications, methodological constraints and target population
- **Results:** A description of any evidence that the organization or product has achieved its objectives and undertaken any formal or informal evaluation of efficacy
- **Publications:** Inclusion of white papers, peer-reviewed materials, and other formal analyses where possible if only marketing materials were accessible via the website

For organizations that summarize material or pilots done by others groups, we describe how to access the summaries. There has also been significant growth in reporting of the core quality measures at the state level. Rather than inventory multiple programs that list the same core measures in each state, the report presents reference to sites which track this information or uses examples from a few states that illustrate particularly interesting approaches or innovations.

Where the scope was clear, we identified the scope of information on quality measures or programs, such as whether the measure or program is a proprietary product, specific to a network of organizations or intended to be applied industrywide. We identified representative international or state-specific organizations or programs. We also sought to identify the primary data source (administrative claims data or clinical data) of the quality measure or product if the information was clearly stated.

The purpose and approach for the measures and programs varied significantly. As the data gathering progressed, different ways of categorizing the information based upon the focus or the intent of the program or measure evolved. Given the complexity of the topic, these

categories are nuanced and not always mutually exclusive. The categories condensed what might otherwise be an overwhelming array of measures, products, services and general activity into a few key areas.

The categories are:

- Accreditation, certification
- Analytics (on population and risk)
- Analytics (on resource use, efficiency and related cost)
- Decision support
- Incentives, rewards programs
- Performance ratings, reports, scorecards, benchmarking (actual performance)
- Standards setting, industry organizations (measurement structure)
- Summary for public, consumer and intermediaries

Definitions of these categories are listed in Appendix A.

3. Limitations and Measurement Challenges

The United States has a large and complex health care system and highly divergent stakeholder goals and perspectives; the current measurement challenges reflect the health care environment and payment system.

The major limitations on measurement are outlined in the first half of this section. These conditions include environmental challenges such as structure, stakeholders and payment systems. The other measurement challenges are more technical and include the numerous definitions of quality and efficiency and multiple approaches to measurement. The second part of this section outlines the technical challenges and implications from the rapid pace of change.

The situation is changing. The industry is developing and testing a wide variety of pilots and potentially powerful initiatives.

“The nation’s health care system is undergoing dramatic change as the country shifts to a value-base business model. The pace of the transition varies by market, but hospitals, care systems and other providers must be proactive.”⁷

“we are also seeing a profound change in how payors compensate and incent providers.”⁸

3.1. Environment: Large, Decentralized and Complex System

The health care system in the United States is vast, complex and far-reaching. It represents approximately one-sixth of the national economy and greatly impacts other parts of the economy. Health care costs are covered through various payers: Medicare, Medicaid, employers and individuals. Measurement has been difficult in a decentralized health system.

3.1.1. Health System Stakeholders: Purchasers

Medicare, Medicaid, employer-based and individual insurance programs work with very different populations, programs, databases and approaches to measurement. This leads to highly different perspectives on measurement and payment. For example,

- **Populations:** Seniors covered by Medicare often have multiple illnesses. This creates complex analysis.
- **Programs:** Medicare pharmacy data is decentralized through many intermediaries. Programs offered by employers generally cover outpatient pharmacy within an

⁷ Hospitals in Pursuit of Excellence (downloaded September 22, 2013), <http://www.hpoe.org/resources/hpoeretahaguides/1406>

⁸ Kurt Wrobel, Letter from the Editor, www.soa.org/Library/Newsletters/Health-Watch-Newsletter/2013/january/hsn-2013-iss71.pdf

integrated program. Consequently, data for employer-purchased insurance may be more readily available.

- **Payment systems:** Original Medicare pays most hospital admissions using diagnosis-related groups (DRGs). Programs for employers and through individual insurance often pay per day.

Major purchasers also have different approaches to measuring results and improving programs. Medicare has a variety of quality reporting and value-based purchasing initiatives. Medicaid programs have started patient-centered medical homes in many parts of the country. Also, there are numerous carrier/employer-based programs for employers and individual purchasers.

There are major efforts to create more consistency and alignment across the public and private sector. For example, the private sector versions of accountable care organization programs share a common direction with federal Centers for Medicare and Medicaid (CMS) Shared Savings and Pioneer ACOs (although the details are different). This alignment creates a new opportunity to strengthen the health system across the country regardless of payer. This could lead to major opportunities to align organizations, measurement and payment systems across health care purchasers.

This report considers the three major purchaser stakeholders—Medicare, Medicaid and insured populations.

3.1.2. Decentralized Health Care Systems

Some measurement challenges come from the environment.

- Hospitals and physicians have very different responsibilities. As a result, their organization, problem-solving styles, data collection and measurement approaches are diverse.
- There are many industry initiatives with varying goals. Some are highly collaborative (and public) while others are proprietary.
- Many measures are collected through non-standard administrative approaches. Other measures, such as surveys of the experiences and satisfaction of consumers or providers, are also used. These types of surveys are generally not reflected in this report.
- Measurement methods vary widely depending on the source of data such as measures based on claims, medical charts (clinical) and laboratory test values. The standards of care against which quality is assessed may vary from those of quality organizations, commercial vendors and nationally endorsed, medical-specialty societies.
- Dissemination and adoption of clinical improvements has been slow the size of health care industry and decentralization.
- Little or no feedback is often given to providers about value or results for their patients.

Besides measuring quality and efficiency, there are also multiple approaches to improving quality and efficiency, e.g., re-engineering, continuous quality improvement (CQI), Six Sigma,

and LEAN production improvement techniques. These initiatives within hospital departments or physician offices can impact quality and efficiency but are outside the scope of this report.

3.1.3. Misalignment of Payment (In Current Fee-For-Service Structure)

The current fee-for-service payment system is primarily focused on input units (an office visit, lab test or hospital admission), rather than outputs, such as quality, efficiency or outcomes. This means that the medical system is often paid for volume rather than efficiency or results. Since independent payments are made to each doctor and hospital, there are few incentives to coordinate their services. For example,

- Physicians are paid for office visits. They are not paid to keep a patient healthy or for phone follow-ups. In fact, often if the patient does not come to the office, the physician loses that potential revenue.
- For hospitals, complications use far more resources than uncomplicated care. However, the payment received by the hospital for complicated care is often much larger. As a result, a program such as readmissions or retesting to reduce avoidable complications causes a loss of revenue. Ultimately then, the net impact is a financial disincentive to control complications.

Solutions to this misalignment are fundamental to improved quality and reduced cost. There are many new initiatives in the making. There is no consensus on a name for the new programs although terms such as payment reform and value-based payment are beginning to be used by various leaders. The major payment reform initiatives are discussed later in the report.

3.2. Definition of Quality

The word “quality” can have a range of meanings. Physicians, hospitals, consumers and purchasers all use this term in a general manner. This report focuses primarily on measurable quality related to:

- **Hospitals and physicians:** Pharmacy, durable medical equipment, ambulatory care services, nursing homes and home health services are excluded.
- **Process and, if available, outcome measures:** Metrics of health quality often measure structure and process, although outcome measurement is becoming more common. Process measures gauge activities that contribute to quality but which are, essentially, operational. These include conducting appropriate tests, timely office visits and/or adherence to standards of care. Outcome measures include disease stage, morbidity, mortality, complication rates and readmission rates.

The widely discussed Institute of Medicine (IOM) Quality Chasm report⁹ has also developed six aims of improved quality that are widely used. The aims are summarized in Appendix B. The focus of this report is primarily the patient safety and efficiency categories discussed by IOM.

Studies related to other important definitions of quality are beyond the scope of this report. Areas generally excluded for the purposes of this study are:

- Access
- Administration/organization such as accreditation, certification and staffing
- Clinical chart reviews
- Disparities in care
- Equity
- Focused clinical interventions on particular illnesses and many illness-specific formal studies
- Patient experiences/satisfaction
- Service quality, such as timeliness

This report focuses on “measurable quality,” such as measures for chronic conditions such as diabetes and cardiac care. Measurable quality is a subset of a broader definition of quality.

3.3. Different Approaches to Measurement

A major challenge comes from fundamentally different approaches to measurement across the lines-of-business of the health care industry. Stakeholders have their own objectives and professional training with respect to measurement.

- When measuring results using formal studies, the provider delivery system focuses intensely on specific illnesses, and uses formal, extensive academic research to make decisions about health and quality care. This approach is micro-oriented around a very specific set of clinical conditions and adherence to evidence-based medical treatments.
- For some illnesses, there is strong evidence-based research showing that one specific treatment is the appropriate approach. For other illnesses, the appropriate treatment is unclear, or sensitive to the preferences of the patient. Since results are often disseminated slowly through the decentralized health system, areas of confusion or disagreement regarding evidence-based medicine can arise.
- Buyers of health care who are responsible for broad populations and funding of overall costs have historically relied on macro measures of cost, efficiency, utilization and resource use by place-of-service. These can be adjusted for risk or severity.

As an example of the difference between micro and macro approaches, consider an analysis of diabetes. A macro approach would be to evaluate a provider’s quality and efficiency at a population level, looking at key statistics such as the proportion of appropriate tests, procedures

⁹ Institute of Medicine’s Committee on Quality of Health Care in America, *Crossing the Quality Chasm: A New Health System for the 21st Century* (Washington, DC: The National Academies Press, 2001).

and medications prevalent within the provider's panel of diabetes patients adjusted, if appropriate, for relative risk or severity. A micro approach might instead look at the treatment pathway followed for an individual patient and determine whether care was provided at the right time in accordance with best-practice treatment guidelines for the specific diagnosis and severity of that patient. The former analysis may be performed using the tools addressed in this study. The latter requires tools and information, particularly clinical pathways and guidelines, and up-to-date evidence on the efficacy of certain treatments. There are many very deep, illness-specific approaches found in major journals and literature; these measures are outside the scope of this report.

The wide chasm between macro- and micro-measurement approaches has been a source of misunderstanding. It has historically been difficult to move back and forth between population and illness-specific approaches.

These differences take on added momentum and controversy when business interests are not aligned. This is particularly evident when information on quality and efficiency might be released to either the general public or insured members. This situation can cause highly charged exchanges on the Internet or in the popular press. These exchanges can include both highly technical discussions as well as major policy questions, such as whether credible measurement is possible or should even be attempted.

There have been many recent important developments related to this many diverse approaches to measurement mentioned in the previous paragraphs. New episode-of-care techniques and patient-centric reminders about gaps in care highlighted in this report provide a framework to improve communication on specific illnesses and help to bridge the micro/macro communications gap.

3.4. Implications of Diverse Stakeholders, Goals and Perspectives

In spite of the size and complexity of the health care system and difficulties of measurement, major quality initiatives have found common ground in the treatment and measurement of a number of major illnesses. These initiatives have been collaborative and share common goals.

However, other initiatives, particularly those focused on efficiency or resource use, involve stakeholders with different and competing goals. The business interests and financial incentives of buyers and sellers of services are often misaligned, making a collaborative effort around the measurement of efficiency extremely challenging.

These different business interests magnify core technical disagreements including sample size, attribution of patients to individual physicians, the responsibilities of the physician for evidence-based treatment, the patient responsibility for healthy behavior and the payer for establishing a reimbursement system that does not discourage patient compliance and the appropriateness of measurement at the specialty level.

3.5. Implications of the Rapid Pace of Change

There are many forces—including the financial situation, stronger provider leadership, deeper analytics, and energy and alignment across many early initiatives (federal, state, private sector)—pushing the industry transformation. This was reinforced by the ACA, which has greatly changed the federal environment. Major elements within the act directly impact quality and payment reform. The legislation provides new specific authority for innovation, payment reform, and new Medicare and Medicaid programs. These forces have energized many people and organization already active in improving health care. Many key hospitals, physicians and carriers are beginning to implement new collaborative programs based on the long-term changes proposed; however, there is much to accomplish over the coming years and many details are still being defined.

The combination—financial challenges, new legislation, private sector developments and ongoing technology changes—means the measurement of quality and efficiency of the health care industry is evolving rapidly. Often new measurement practices emerge before formal academic studies can be completed. Given the extraordinary pace of change, this creates a distinct gap between current practice and formal research. To provide the most current update, this report includes both formal published articles and developing practice.

The reader should apply judgment when reviewing material on these topics and consider the balance between timeliness and formal acceptance. It is also crucial to understand and evaluate the perspectives of the authors of the cited papers and reports.

4. Importance of Measuring Quality and Effectiveness

The intent of the “three-part aim”—better care for individuals, better health for populations and lower growth in expenditures— is performance improvement across the health system. Strong measurement is fundamental to any improvement. These quality and efficiency measurements are used for multiple purposes, including professional standards, government oversight, professional accreditation, quality improvement, network development, pay-for-performance programs, public reporting, consumer health education, financial management and purchaser decision-making.

Historically, getting measures enacted took a long time. Implementation is now moving at a far faster pace. Beyond the factors mentioned earlier (financial, ACA, etc.), other components are at work, including

- Improved technology (Internet, health information technology, analytic systems, faster reporting)
- Implementation at the provider level
- Alignment between measurement and new payment reform (value-based payment initiatives)
- High provider engagement
- Better alignment between federal, state and private sector action

Although the current environment is changing rapidly, the core driving forces remain the same.

Health costs continue to rise faster than general inflation. The pace has dropped over recent years, however, due to events such as the recession, lower employer coverage and Medicare payment changes, as well as broader ongoing changes throughout the industry.

“New estimates released today from the Office of the Actuary at the Centers for Medicare and Medicaid Services (CMS) project that aggregate health care spending in the United States will grow at an average annual rate of 5.8 percent for 2012–22, or 1.0 percentage point faster than the expected growth in the gross domestic product (GDP). The health care share of GDP by 2022 is projected to rise to 19.9 percent from its 2011 level of 17.9 percent.”¹⁰

Additional details is available at the related article..¹¹

The results achieved for this level of expenditure have been the subject of active debate regarding efficiency, effectiveness, quality and cost. According to the Congressional Budget Office, “Perhaps the most compelling evidence suggesting inefficiency in the health sector is that per capita health care spending varies widely within the Medicare program, and yet that variation is not correlated with available measures of the quality of care or of health outcomes overall.”¹²

¹⁰ <http://healthaffairs.org/blog/2013/09/18/us-health-spending-growth-projected-to-average-5-8-percent-annually-through-2022/> (accessed September 2013)

¹¹ <http://content.healthaffairs.org/content/early/2013/09/13/hlthaff.2013.0721>

¹² Congressional Budget Office testimony, “Options for Controlling the Cost and Increasing the Efficiency of Health Care,” before the Subcommittee on Health Committee on Energy and Commerce, U.S. House of Representatives

The seminal IOM Quality Chasm report,¹³ has been a catalyst for widespread discussion and quality improvement activity. A broad range of health care industry players has undertaken significant research and development. The focus has been on the creation of organizations, products and measures that encapsulate the six aims for quality improvement specified in the IOM Quality Chasm report, namely: safety, effectiveness, patient-centeredness, timeliness, efficiency and equity. These aims are further described in Appendix B.

The combination of financial forces, legislation and technology has created high activity throughout the industry and was a major factor driving passage of the ACA. The law expands beyond historic measurement approaches. It explicitly offers innovative payment options including payment bundling, reducing avoidable hospital readmissions and gain sharing. These legislative changes are discussed in more detail in the CMS section (5.1.2) and the various CMS items in the Inventory.

The remainder of this section provides a brief overview of the varying approaches to health care measurement and outlines important new developments.

4.1. Varying Approaches to Measuring Health Care Quality and Efficiency

As mentioned earlier, the decentralized U.S. health care system represents one-sixth of the United States economy, measurement of health care quality and outcomes is challenging, and there are many approaches.

The good news is that technology is better, metrics are improving, and there are a multitude of organizations actively involved in developing ways of determining health care quality and quality improvement. New metrics and technology for measuring gaps in evidence-based medicine and episodes-of-care help organize health care data and provide a framework to narrow the fundamental gap between micro-measures of specific illnesses and macro-measurement of population approaches. There is an emerging consensus that the measurement of health care quality leads to improved health care outcomes. Actions at the provider-level reinforce this direction.

Many practical applications includes both quality and efficiency elements. However, the quality and efficiency metrics and approaches are quite different, and, so, for the purpose of this report, discussions of quality and efficiency have been separated.

Although published articles often present these approaches as brand new, many of these new approaches build upon historic techniques that were used, but only in limited settings. The new approaches are often vastly expanded either in scope, location, or depth.

- Centers of Excellence for one specific illness are now Bundled Payments applied across many illnesses

(March 10, 2009) (statement of Douglas W. Elmendorf, CBO director), http://www.cbo.gov/ftpdocs/100xx/doc10016/03-10-Health_Care.pdf.

¹³ IOM, *Crossing the Quality Chasm*.

- Principles from historic concepts like Organized Systems of Care, Clinically Integrated Networks, or high performance networks are now expanded into Accountable Care Organizations or Patient Centered Medical Homes. (*Note:* Clinically Integrated Networks are similar but distinct given the legal implications of the terminology)
- Pay-for-performance programs are not as extensive as pay-for-value programs. But, the experience generated during these programs creates individuals with expertise at collaboration between groups of providers, individual providers, and carrier.

4.2. Quality Measurement

The industry is producing additional quality measures that cover more illnesses in a wider variety of settings. For example, core measures, such as Healthcare Effectiveness Data and Information Set (HEDIS) results are now widely available on the Internet. The Medicare Shared Savings explicitly include 33 quality metrics. There are also population-based approaches to measuring appropriate care and compliance with evidence-based medicine.

Measurement of physician quality is one area where there has been momentum for change. Historically, it has been difficult for physicians to keep up with the volume of new clinical developments. Findings had been slow to reach physicians and patients, but the pace is increasing given stronger Internet and systems support.

In 2006, RAND Corp. published *The First National Report Card on Quality of Health Care in America*.¹⁴ Based on the metrics analyzed by RAND, “The bottom line: all adults in the United States are at risk for receiving poor health care, no matter where they live; why, where, and from whom they seek care; or what their race, gender, or financial status is.” The RAND report concluded: “Overall, participants in the study received about half of recommended care.” A comparable report focused on children was published in 2007.¹⁵

The last few years have seen widespread initiatives on quality. The provider community and many key buyers have been very active. A number of pilots have shown early improvements in quality, and providers have accepted responsibility for improvement in quality for millions of individuals through federal, state and private sector programs. For example, there are quality metrics in bundled payment pilots, accountable care organizations and federal value-based purchasing programs. In addition, several physician specialty societies and hospital associations have been working to review the literature, develop guidelines and speed dissemination of results. Many organizations and new initiatives are beginning to measure actual results based on these guidelines.

¹⁴ Elizabeth A. McGlynn et al., *The First National Report Card on Quality of Health Care in America* (Santa Monica, CA: RAND Corporation, 2006), http://www.rand.org/pubs/research_briefs/RB9053-2.

¹⁵ Rita Mangione-Smith et al., “The Quality of Ambulatory Care Delivered to Children in the United States,” *New England Journal of Medicine* 357 (2007), doi:10.1056/NEJMs064637.

4.3. Importance of Efficiency Measures

The ongoing increases in health care costs generate impetus for renewed efforts around efficiency measures. The financial pressures of rising health care costs for federal and state governments and employers impose a severe strain on budgets.

Employer-based coverage for employees is under serious stress, with decreased enrollment and many employers seeking alternatives, including increasing the share paid by workers or reducing coverage. According to Milliman, “Health care costs for American families in 2012 exceed \$20,000 for the first time. The cost of their health care for a single year is roughly equivalent to the cost of a basic mid-size sedan.”¹⁶

The ongoing costs of health care and value received by purchasers make efficiency a major topic.

In the past, many efficiency initiatives were conducted internally. There was only limited public material on efficiency, since solutions were often proprietary and reductions in resource use and financial impact can be a sensitive topic. However, this is starting to change. As discussed throughout this report and appendices, more public material is now available.

4.4. Innovations in Efficiency Measurement

Recent developments show significant potential and greatly expand historical financial analytic techniques related to efficiency or resource use. According to the CMS publication “Medicare Resource Use Measurement Plan,”¹⁷

Resource use can be defined in many ways. Researchers and others have often compared the costs of care for specific populations based on per capita costs. Some researchers have used per capita Medicare costs for certain conditions to assess geographic variation in Medicare spending. CMS has used per capita cost for patients of several group practices to calculate savings associated with improved care management in the physician group practice (PGP) demonstration.

Another measure of resource use is related to specific services. For example, it is widely agreed that some costly readmissions could be prevented with better care management and thus represent inefficient care delivery.

While per capita and service-specific measurements are useful, CMS efforts have focused primarily on metrics associated with episodes of care, that is, a series of separate but clinically related services delivered over a defined time period. Episodes are often difficult to define because of differing opinions regarding which services

¹⁶ Milliman, “2012 Milliman Medical Index,” Research Report (May 2012), <http://publications.milliman.com/periodicals/mmi/pdfs/milliman-medical-index-2012.pdf>.

¹⁷ Centers for Medicare and Medicaid Services, “Medicare Resource Use Measurement Plan,” http://www.cms.hhs.gov/QualityInitiativesGenInfo/downloads/ResourceUse_Roadmap_OEA_1-15_508.pdf.

should be grouped together. They provide several advantages over per capita or service-specific metrics.

Efficiency measurement is often built around several analytic approaches.

- **Evaluate and reduce variation:** A key approach to measuring and improving efficiency is common to many industries: measure resources and results, investigate why results vary, determine best practices and then reduce the variation. This approach is the foundation for reports like the Dartmouth Atlas of Health Care,¹⁸ which builds on the seminal work of Dr. John Wennberg and recent work of Dr. Elliot Fisher.
- **Group and measure similar illnesses:** A strong historical example of this approach is the DRG structure used by many countries to pay for inpatient hospital services. This system summarizes hospital discharges by type of illness and level of complication. The underlying structure has been revised to build Medicare-severity DRGs (MS-DRGs). This structure was historically used for inpatient admissions; it does not reflect total costs, including outpatient care. After many years of effort, this basic concept has now been extended beyond hospital stays to include overall costs based on episodes-of-care. These structures have been extensively refined over the last few years.
- **Evaluate resource use (utilization and unit costs):** Efficiency analysis typically measures two elements—the number of services and the fees for each service. Measuring both elements is more powerful than either element alone. However, it can add to the complexity of the analysis or create confidentiality problems, such as those that arise from use of proprietary fee schedules. To avoid confidentiality problems, some major projects focus on resource use rather than fee schedules. This can be done by replacing the actual fee for services with standard, or “normalized,” fees for many services.
- **Reward clinically sound care:** As discussed earlier, the financial incentives in current fee-for-service payment system are misaligned. Consequently, avoidable complications, such as readmissions or retesting, result in higher payments than uncomplicated care. The industry is starting to develop and test alternative reimbursement systems as part of value-based payment reform. Many of the initiatives and pilots discussed in section 6 provide support and financial incentives for clinically sound care.
- **Communicate the measurement to the person who can take action:** Given the size of the health system, key information is often not known by the individual who needs to take action. There is far more commitment to getting this information to the right person at the right time—whether it be the member, physician, staff or other support people.
- **Determine priorities and potential impact:** There are many possible initiatives, so early analysis is essential to focus time and energy

¹⁸ <http://www.dartmouthatlas.org/>

- **Deep process re-engineering:** These processes continue to be extended: across more organizations through operational analysis, or to treat specific illnesses based on clinical impact and resource use.

All of the concepts above are now being applied more consistently and at deeper levels.

There is also more formal discussion of how to integrate the analytic approaches and responsibilities fit together. For example, once a major surgical episode is needed, what measures will be applied, who would be the right manager, how do we pay the person for taking broader responsibility and what actions should be taken. As another example, many episode payment initiatives use an analytic framework split between probability risk (variations in member health) and technical risk (variations in performance). Probability risk is the responsibility of the buyer. Technical risk is the responsibility of the provider.

4.5. Challenges to Efficiency Measurement across Populations

Efficiency measures have lagged quality metrics for various reasons, including system complexity and decentralization. There are four other factors that have slowed efficiency measurement.

- **Resource use variation:** Quality programs can aim for a common recommended clinical treatment for a major illness nationally, regardless of location. However, the resources used to deliver treatment are often not defined. For example, are both an MRI and X-ray needed for a particular treatment?
- **Price variation:** Total cost is a combination of price and utilization. Efficiency, therefore, varies depending on the structure and amount of payment. The Medicare payment structure is different from fee-for-service payments, and both are different from capitated or salaried provider programs. For example, under a private sector program, if one organization charges 25 percent more than another organization for equivalent results, it is more efficient to use the less expensive provider.
- **No common goal:** Efficiency measurement can create strong differences of opinion about the basic goals. Unlike quality initiatives, buyers of care and sellers of services often have widely different views. Efficiency measures create winners and losers, and the affected organizations react to protect their interests.
- **Current incentives are misaligned:** Improving efficiency can lower revenue for the hospital or physician. Therefore, reducing unneeded resources creates a loss to the provider, and, in the short term, the payment structure discourages measurement and efficiency. Given this, it can be useful to understand the net impact on both resources and revenue. Results can be evaluated to determine if there is an incentive to improve efficiency.

Recent articles in the *Journal of the American Medical Association (JAMA)* and *Health Affairs* discuss these challenges.

JAMA showed complications created much higher profit margins for hospitals for their two largest lines-of-business “the occurrence of postsurgical complications was associated with a

higher per-encounter hospital contribution margin for patients covered by Medicare and private insurance.”¹⁹

The *Health Affairs* article discussed the impact of efficiency initiatives: “Programs to achieve such improvements can reduce hospital revenues, as reimbursements to treat patients for complications decrease.”²⁰

Given the fundamental complexity and very different goals and existing payment structures, efficiency measures cannot be developed by the same industry-wide consensus used for many quality initiatives. When reviewing the material presented by applicable organizations on efficiency, it is important to be aware of the business interests behind each perspective.

¹⁹ Sunil Eappen et al. “Relationship Between Occurrence of Surgical Complications and Hospital Finances,” *Journal of the American Medical Association* 309, no. 15 (2013): 1599-1606, doi:10.1001/jama.2013.2773.

²⁰ Dan C. Krupka, Warren S. Sandberg and William B. Weeks, “The Impact on Hospitals of Reducing Surgical Complications Suggests Many Will Need Shared Savings Programs with Payers,” *Health Affairs* October 2012, doi: 10.1377/hlthaff.2011.0605.

5. Overview of Stakeholders and Organizations

This section provides a brief background and summary of the types of organizations presented in the Inventory (Appendix D). Categorization of these organizations is challenging since many of them play multiple roles in the health care industry. Compounding this difficulty is the fact that the roles of these organizations are continually evolving.

For the purposes of this report, organizations have been identified based on their primary focus. There are multiple subsections in this part of the report. The first subsection describes organizations with broadly based roles (5.1). The remaining subsections list organizations whose primary focus is within one particular area. Because the underlying core metrics and measurement approaches to quality and efficiency are quite different, the two components are discussed separately in this report. Similarly, the hospital inpatient environment and processes are also very different from the outpatient environment and are discussed separately. Therefore, each subject is given its own section (5.2–5.7).

The organizations in this report interact with each other in a number of ways. For example,

- The National Committee for Quality Assurance (NCQA) developed national consensus standards for quality metrics with multiple stakeholders. Using these standards, insurance carriers collect data on quality that can be audited by NCQA. The committee also developed standards for PCMHs. Information is reported and often appears on both carrier and state government websites. In some states, major independent statewide organizations have been created to provide an infrastructure for performance improvement.
- Metrics about appropriate physician care have been developed through academic studies, physicians and specialty societies. This information has been evaluated by various organizations such as the National Quality Forum (NQF) and RAND to create quality metrics for physicians. The resulting information is used by private sector organizations such as Active Health Management, Health Dialog, OptumInsight, and Resolution Health to build systems to collect data, measure results, and communicate gaps back to physicians and/or members.

The dynamics have changed since the passage of health care reform. Organizations with an interest in integrated solutions such as ACOs or patient-centered medical homes and those proposing new payment alternatives are taking a broader role. In many cases, they are working directly with other organizations with a long-standing focus on quality and efficiency to develop initiatives.

5.1. Organizations with a Broad Role

5.1.1. National Organizations that Develop and Approve Measures

There are many national initiatives underway to develop and approve measures of health care quality. The organizations summarized in this section have long-standing commitments and credibility in their efforts to improve quality through formal consensus-based processes with major stakeholders. Many players represent multiple stakeholders and work through a collaborative process to

- Investigate and develop measurement tools
- Reach consensus regarding metrics
- Improve data collection
- Facilitate the appropriate use of measures throughout the system

Given the increasing importance of these topics over recent years, the major players are moving toward even greater coordination and collaboration.

A few examples will provide insight into how these organizations operate. The first two examples are formal organizations dedicated to measurement. The last two are newer collaborations and multi-stakeholder pilots.

- NCQA is a nonprofit organization that started with the development of the broadly used HEDIS. The committee uses on- and off-site surveys, audits, satisfaction surveys and clinical performance measurement. NCQA offers various accreditation, certification and physician recognition programs and has built the Quality Compass to summarize information on quality improvement and health plan performance.
- NQF was created to develop and implement a national strategy and standardize national performance measures, quality indicators and similar metrics. To date, the forum has endorsed about 700 performance measures and practices. NQF is beginning work to assess efficiency metrics and risk adjustment; subsets of these metrics are used by multiple organizations.
- Many learning networks are being developed by organizations as diverse as the Brookings Institute and the Dartmouth Institute for Health and Policy Practice, Institute for Healthcare Improvement (IHI), American Medical Group Association (AMGA) and the Premier Inc. hospital collaborative.
- Summaries of pilots are available from organizations including the Blue Cross and Blue Shield Association and Patient-Centered Primary Care Collaborative (PCPCC).

The Inventory summarizes the following organizations with a broad and formal role:

- Agency for Healthcare Research and Quality (AHRQ)
- Blue Cross and Blue Shield Association (BCBSA)
- Bridges to Excellence (part of Health Care Incentives Improvement Institute (HCI3))
- Brookings-Dartmouth ACO Learning Network
- The Hospital Quality Alliance

- Institute of Medicine (IOM)
- National Committee for Quality Assurance (NCQA)
- National Quality Forum (NQF)
- Patient-Centered Primary Care Collaborative (PCPCC)

There are also a number of organizations who are working to improve the health system. As one major example, multiple professional societies/academies and other organizations are working extensively to support primary care under the umbrella concept of Patient Centered Medical Homes. Key organizations and web links are listed in the Inventory under Patient Centered Medical Homes.

5.1.2. Centers for Medicare and Medicaid Services (CMS)

CMS is the federal agency responsible for administering Medicare, Medicaid and other insurance programs.

Historically, CMS has a strong presence in the measurement of quality and efficiency due to its multiple roles, as well as its legislated authority and regulatory responsibility. This is greatly expanded under the ACA. CMS—and its new Center for Medicare and Medicaid Innovation (CMMI)—have been very active.

One major part of the ACA change is value-based-payment on topics like readmission reduction, hospital-acquired infections and value-based purchasing. These have been very visible in the industry.

“Instead of payment that asks, ‘How much did you do?’ the Affordable Care Act clearly moves us toward payment that asks, ‘How well did you do?’ and more importantly, ‘How well did the patient do?’ ” from Dr. Don Berwick, CMS Administrator April 11, 2011.²¹

Other major new programs include:

- Accountable care organizations (including both the Pioneer and Shared Savings ACOs)²²
- Advanced Primary Care Practice demonstration²³
- Bundled payment²⁴
- Comprehensive Primary Care (CPC) initiative²⁵
- State demonstrations to integrate care for dual eligible individuals (beneficiaries with both Medicare and Medicaid)²⁶

²¹ http://www.neebco.com/Hospital_VBPurchasing_Fact_Sheet_ICN907664.pdf

Note: this is an archived fact sheet.

²² Centers for Medicare and Medicaid, “Accountable Care Organizations,” accessed August 2013

<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?redirect=/ACO/>.

²³ Ibid., “FQHC Advanced Primary Care Practice Demonstration,” accessed September 2013

<http://innovations.cms.gov/initiatives/fqhcs/index.html>.

²⁴ Ibid., “Bundled Payments for Care Improvement,” accessed September 2013

<http://innovation.cms.gov/initiatives/bundled-payments/>

²⁵ Ibid., “Comprehensive Primary Care Initiative,” accessed September 2013

<http://www.innovations.cms.gov/initiatives/Comprehensive-Primary-Care-Initiative/index.html>.

These programs have had high participation. According to Jonathan Blum at CMS in February 2013, more than 4 million beneficiaries will be receiving care from several hundred providers participating in Medicare shared savings initiatives through ACOs. In addition, over 500 hospitals are participating in the bundled payment pilots.

There are also several important ongoing federal programs, including Quality Improvement Organizations (QIO), the Physician Quality Reporting System (PQRS) and web-based comparative tools such as Hospital Compare. There have also been a number of incentive demonstration projects, such as Premier's Hospital Quality Incentive Demonstration (HQID).

CMS authority and direction is greatly expanded by the passage of the ACA health reform legislation. Most key provisions are within Title III. Improving the Quality and Efficiency of Health Care. Specific new initiatives established by the Affordable Care Act include

- Value-based purchasing initiatives
- Strengthening of the quality infrastructure
- Patient-centered medical homes for high-need individuals
- Models to transition primary care from fee-for-service–based reimbursement
- Shared savings pilots
- Accountable care organizations
- Voluntary pilot to test payment bundling
- Co-ops

Most of these programs include both quality and efficiency metrics.

Other major changes in the ACA include the CMS' new authority to rapidly expand successful pilots without additional legislation, which historically was not permitted. The new CMMI will be able to extend or expand programs found to improve quality of care, reduce spending or both. To this end, CMMI has awarded a number of grants, which are listed at

<http://innovation.cms.gov/initiatives/Health-Care-Innovation-Awards/>

Various Medicaid demonstration projects are described in sections 2101 to 2707 of the consolidated act.²⁷ These are not the focus of this report.

On an ongoing basis, significant Medicare results and initiatives are summarized in various reports by the Medical Payment Advisory Committee (MedPAC), which advises Congress on Medicare issues. The Medicaid and CHIP Payment and Access Commission (MACPAC) serves a comparable function for Medicaid.

²⁶ Ibid., “State Demonstrations to Integrate Care for Dual Eligible Individuals,” accessed September 2013
<http://www.cms.gov/Medicare-Medicaid-Coordination/Medicare-and-Medicaid-Coordination/Medicare-Medicaid-Coordination-Office/StateDemonstrationstoIntegrateCareforDualEligibleIndividuals.html>

²⁷ The Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148, 124 Stat. 119 (2010);
<http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf>.

Outlines of various CMS programs are included in the Inventory:

- Accountable care organizations (including both the Pioneer and Shared Savings ACOs)
- Advanced Primary Care Practice demonstration
- Better Quality Information to Improve Care for Medicare Beneficiaries (BQI) project
- Bundled Payments for Care Improvement
- Comprehensive Primary Care initiative
- Dual Eligible – State Demonstrations
- Hospital Compare
- Hospital Quality Initiative (HQI) - overall CMS program
- Measures Management System (MMS)
- Medicare hospital Value-Based Purchasing (HVBP) program
- Medicare Quality Improvement Organization (QIO) program
- Patient Protection and Affordable Care Act of 2010 provisions on measurement
- Physician Group Practice Demonstration (PGPD)
- Physician Quality Reporting System (PQRS)

5.1.3. State Programs (Medicaid and Private Sector)

Historically, many programs are organized and implemented at the state level. These are very diverse depending on sponsor and purpose.

- State government or state health departments have created statewide health improvement programs.
- Public or private reporting of quality, efficiency or both
- Narrow topics like cardiac care to broad measures of quality of hospitals, physicians and medical groups
- In some cases, local communities, such as the Puget Sound Health Alliance in Washington, have also developed strong websites and programs about these topics.

Many of these programs are of long-standing and often have substantial public information available on their websites. California, Massachusetts, Michigan, Minnesota and New York are examples. The early programs were often driven by buyers or multi-stakeholder collaboratives; providers are now much more involved and the level of engagement and action is far higher.

For the states themselves, fiscal problems, plus powerful new technology, web capabilities and increasing focus on health care costs are driving major action. For example,

- In Massachusetts, a multiyear discussion of cost drivers and payment options lead to legislation to revise the payment system.²⁸

²⁸ Governor summary of payment reform in Massachusetts:
<http://www.mass.gov/governor/agenda/healthcare/cost-containment/>

- Statewide system reform initiatives and/or waivers are underway in many states, a sample of these for Arkansas, Oregon and Vermont are in the Inventory.
- There are multiple P4P programs and patient-centered medical homes in many states.

Much of this activity is driven by Medicaid programs. Others start with Medicaid and extend into commercial and Medicare populations. The range of programs is described in more detail in section 6.

In the past, it was difficult to track state-by-state programs. However, this is now easier. The National Academy for State Health Policy (NASHP) and the Medicaid and Children’s Health Insurance Program (CHIP) Learning Collaboratives (MAC Collaboratives) have websites with extensive summaries of state-level programs.

At one level, the wide variations in pilot approaches by state makes understanding the system difficult. However, these multiple pilot programs will eventually offer insights into which actions work to improve performance.

The Inventory summarizes both long-standing and new programs for a sample of states listed below. Many other states have programs as well and can be found through Internet searches.

- California
 - California Healthcare Foundation
 - California Cooperative Healthcare Reporting Initiative (CCHRI)/Pacific Business Group on Health
 - Integrated Healthcare Association (IHA)
- Excellus BlueCross BlueShield Quality Improvement Program
- Hawaii Medical Service Association (HMSA), summary by Blue Cross and Blue Shield Association
- Maine Health Management Coalition
- Massachusetts
 - Alternative Quality Contract
 - Massachusetts Group Insurance Commission (GIC)
 - Massachusetts Health Care Quality and Cost Council (HCQCC)
 - Massachusetts Health Quality Partners (MHQP)
- Minnesota
 - Minnesota Health Care Action Group
 - Minnesota Hospital Quality Partnership
- National Academy for State Health Policy (NASHP)
- New York
 - New York State Department of Health
- Oregon
 - Coordinated Care Organizations
- Puget Sound Health Alliance
- Robert Wood Johnson Foundation (Rewarding Results demonstration project)
- Wisconsin Collaborative for Healthcare Quality (WCHQ)

5.1.4. Insurance Carriers

National carriers, Blue Cross/Blue Shield organizations, hospital-owned insurers, and regional insurers provide insurance to many individuals across the country. As part of their operations, they create, measure and maintain quality and efficiency initiatives. Some of these organizations have been very active in this new environment. Many of the ACO and PCMH programs have a connection to the private sector and commercial carriers.

The carriers have been using quality and efficiency measures for years; member reporting, centers of excellence, alternative high-performance networks and similar programs were offered even before the passage of the ACA. As two examples, the Blue Cross of Massachusetts Alternative Quality contract uses both quality and cost metrics. Most California HMOs offer smaller networks that only include providers based on their performance on quality and cost/efficiency.

Many of the current major national concepts have origins in smaller focused programs piloted in the private sector. But, now they are applied in more locations, handling more illnesses, And, the new programs have deeper implementation and with deeper implementation and system support.

- Quality metrics moved from a HEDIS measures at the plan level for a few illnesses to more metrics for more illnesses (and for specific providers)
- High performance networks offered in a few states are now part of the expanded ACO/PCMH concepts in far more locations. This includes both commercial and Medicare Advantage products.
- Bundled payments around a few illnesses like centers of excellence or maternity are now being tested for multiple illnesses
- Pay-for-performance programs helped carriers and providers developed collaboration and expertise that supports the more extensive pay-for-value programs

Most carriers have websites organized by state or region that contain information on the core quality measures. Depending on the location, these may include measures for hospitals, physicians and, if available, physician groups. Some also offer information on provider efficiency or prices in local markets. Many carriers also participate in P4P programs in some locations. Carriers also collect information on patient satisfaction, credentialing and other quality topics outside the scope of this report.

There is also a growing overlap between providers and carriers. Hospitals are interested in owning carriers. Carriers have purchased physician organizations and medical service organizations that offer support to the physician community.

Additional material is included in the Inventory. However, the material for carriers follows a different style than other entries. Communications from carriers reflects the unique role and audience.

- The primary audience for the carriers is members, not professionals. The websites are typically specific for each. For example, quality information may show only the three local hospitals at a time.
- Members and providers can obtain very different in-depth information. Members may see network options or transparent prices. Providers see deep or technically complex material.
- Provider-centric programs such as bundled payments, patient-centered medical homes, accountable care organizations, or reductions in complications or readmission are often still being developed. These pilots also operate behind the scenes.

Deeper technical information often requires registration or is restricted to members or local providers. Entries in the Inventory probably understate activity within the carriers.

The Inventory shows illustrative programs from the following insurance companies.

- Aetna
- Anthem
- Blue Cross and Blue Shield Association
- Blue Cross Blue Shield of Michigan
- Cigna
- Health Net
- HealthPartners
- Highmark
- United Healthcare

5.1.6. Providers

Providers in some parts of the country have been actively involved in measurement and improvements in quality and efficiency through various Medicare Advantage, HMO or pay-for-performance programs. Until recently, this engagement has been limited to certain states and locations. Far more providers across the country are now taking a broader role in measurement and performance improvement. This is happening at multiple levels.

- Many hospitals are developing initiatives for their own employees. Often this includes extensive measurement such as deep data analysis.
- Major providers such as Kaiser Permanente, Intermountain Healthcare, Geisinger Health System and Sharp HealthCare own their own insurance companies. Other major hospitals are considering either strong affiliations with insurers or forming comparable organizations.
- There is direct engagement between buyers, hospitals and/or physicians. Nearly 500 provider organizations are participating in ACOs, Medicare Advantage or other programs through the government or private sector. More than 400 hospitals are participating in the CMS bundled payment initiative.

- Buyers and carriers are providing significant support for primary care physicians through up-front payments, increased technology support, and/or additional training or staffing. Often additional support is based on meeting performance targets.
- There are major collaborative efforts and learning networks across the industry.

Providers bring a very different set of resources to the table. So, ultimately, the combination of traditional and provider-based initiatives offers a much wider toolkit and earlier activity to improve system and member performance.

Some of these organizations are spreading their information outside of the own organizations. For example, the major hospital systems who own insurance companies

A few of these organizations are highlighted in the Inventory, but data sources on these programs are limited. Many of these programs are new. Some material is available for members or their own employees. Therefore, the visible public web material understates the full activity within these organizations.

The Inventory summarizes the provider-based organizations with deep public material.

- American Medical Group Association (AMGA)
- California Association of Physician Groups (CAPG)
- Geisinger Health System
- HealthPartners
- Premier Inc.
- Virginia Mason Hospital & Medical Center

There are also web links to the PCMH programs from the American Academy of Family Physicians, American Academy of Pediatrics, and American College of Physicians.

5.1.7. International

Quality and efficiency improvement is a global trend with many countries recognizing the need to measure outcomes and performance and improve transparency and accountability. Although this report is focused on measurement and programs in the United States, there are a few key international programs that can provide useful insights. This includes some unique approaches to member-level risk assessment and identification of risky patients. These topics are summarized in a separate section on population measurement (section 5.6).

The Inventory summarizes the following organizations working internationally.

- Dr Foster Intelligence, United Kingdom
- Fraser Institute, Canada
- Health System Performance Research Network (HSPRN), Canada
- National Institute of Health and Clinical Excellence (NICE), United Kingdom
- New Zealand Ministry of Health
- Organization for Economic Cooperation and Development (OECD)

5.2. Hospital Quality

Existing hospital quality metrics are now enhanced as they are implemented in various initiatives and tied to payment. There are increased federal reporting requirements, hospital value-based purchasing, rural hospital demonstrations and more focus on hospital/physician integration.

In addition, the new overlap of hospital quality, affordability and efficiency offers a potential framework to improve performance and value. Some key elements overlap; for example, reduced readmission improves both quality and efficiency. These initiatives are discussed in the CMS section (5.1.2) and the Inventory entries for CMS.

There is wider and deeper reporting of quality results for hospitals than for physicians or other providers. This reporting exists in a variety of forums.

- Publications and web pages on quality range from detailed government initiatives to rankings of hospitals available to the public (although any publication can be controversial)
- Federal sources like Hospital Compare or price information are available on the Internet.
- Many states collect basic data on hospital discharges. Master databases with multistate results have been compiled and are available nationally. In many states, results for key illnesses at each hospital are publicly reported.
- Some states have developed greater in-depth studies on specific conditions relevant for those states.
- There are extensive initiatives at the provider level, such as curtailing hospital-acquired infections, “never events” and readmissions. These may tie to both quality and efficiency metrics.²⁹

Historically, most of the hospital quality initiatives focused on inpatient care. There is increasing attention to outpatient treatment, such as ambulatory service centers. Also, new programs like ACOs and bundled payment pilots have financial targets that cover both inpatient and outpatient settings. Additional standards on outpatient care are being developed.

Some major examples of hospital quality measurement include the following.

- The CMS Health Compare program provides statistics on key measurable illnesses such as acute myocardial infarction, heart failure and pneumonia.
- The Joint Commission (formerly known as the Joint Commission on Accreditation of Healthcare Organizations, or JCAHO) accredits hospitals based on extensive hospital operational audits.

²⁹ CMS summaries are available at
<http://www.cms.gov/apps/media/press/release.asp?Counter=3408&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPage=&showAll=&pYear=&year=&desc=false&cboOrder=date>
<http://www.cms.gov/HospitalAcqCond/Downloads/HACFactsheet.pdf>.

- Other approaches start with basic reporting and then move to more sophisticated measurement over time. For example, the Leapfrog Group started with identification of a few key programs that would greatly improve hospital quality. Industry experts projected that computerized physician order entry (CPOE) would significantly reduce pharmacy errors. Leapfrog’s original response was to ask hospitals to self-report implementation of CPOE. The group has since expanded its initiatives.
- The federal value-based payment rules for readmissions, “never events” and hospital-acquired conditions have increased the energy around these topics.
- Major collaborative programs through organizations such as Premier, Inc. have improved performance across multiple hospitals.

The analysis of hospital inpatient data can be extensive. Data credibility must be reviewed even for large databases like those of CMS. Chart audits may be conducted for a deeper perspective on quality, but data allowing linkage of original admission and readmissions are not always readily available in state-level public databases. Furthermore, any public release of information is often sensitive and limited to certain data elements only. Some of these limitations are discussed in the Society of Actuaries’ report listed in Appendix C.

The Inventory summarizes the following organizations with major public material on hospital quality. In addition, many organizations listed in section 5.1 are also focused on hospital quality.

- ASC Quality Collaboration (for Ambulatory Surgery Centers)
- Dartmouth Atlas of Health Care
- Healthgrades
- HealthInsight
- The Joint Commission
- Leapfrog Group
- OptumInsight
- Premier Inc.
- Truven Health Analytics (previously Thomson Reuters Healthcare)
- U.S. News & World Report

5.3. Hospital Efficiency and Resource Use

Over the past few years, hospital efficiency targets have grown beyond inpatient admissions. In some initiatives, hospital efficiency now includes related services preadmission and post-acute care (after the hospital discharge), especially in many bundled payment models. This section originally focused primarily on efficiency related to inpatient admissions; the revised section now covers both perspectives. A deeper discussion of these initiatives is found in section 6.

Techniques to measure hospital outpatient or surgical services, such as analysis by episodes of care or utilization rates, are discussed in section 5.5.

Measurement of inpatient hospital results can be performed at a variety of levels.

- Major hospital projects cover extensive research around particular illnesses.
- MS-DRGs can be used to compare findings across multiple admissions.
- Basic population analysis evaluates key data, such as overall statistics, length of stay, complication or readmission rates.
- More complex analysis and quality metrics for very specific illnesses.
- Formal adjustment can be made for severity, complications and readmissions, and include pre- and post-admission care.

Performance measurement for hospitals is particularly challenging given large fixed costs to run a hospital. Measurement and allocation of fixed overhead costs and the direct marginal costs are beyond the scope of this paper.

Many CMS initiatives link financial incentives with quality goals. For readmissions, there are direct measurement and targets. As another example, most bundled payment models directly link hospital, physician and post-acute care. Given readmission requirements and bundled payments, providers are working across the health system to manage transitions of care.

Private sector programs can also include quality goals within hospital improvement initiatives. In many cases, the initiative is tightly focused on particular admissions. Or, the focus may be on a chronic illness or type of complication. For example, Blue Cross Blue Shield of Michigan's Value Partnerships has initiatives on many illnesses and procedures.

There has been significant activity within the hospital systems. Waste reduction and expense management have started for some hospital systems. This includes expense reduction projects and deep re-engineering studies within hospital departments and across entire health systems. An in-depth discussion of these approaches is outside the scope of this report.

Many organizations measure hospital efficiency internally, although results are often not released externally—given the complexity and range of business goals.

Several organizations have a particularly strong public presence in hospital efficiency measurement.

- 3M Health Information Systems created diagnosis related groups. DRGs have been used for many years by Medicare and a number of states as the basis for hospital reimbursements. The company has continued to refine the DRG system and has created alternatives, including MS-DRGs and all patient refined (APR) DRGs, with additional severity and case mix adjustments for analysis and payment.
- Milliman has metrics including Hospital Performance Index, Cost Guidelines, Global RVUs—or relative value units—to measure possible gaps and variations in care. It also developed measures of ambulatory sensitive care and published an analysis of communities where charges are low for both Medicare and commercial populations.
- The Dartmouth Atlas of Health Care focuses on the overlap between hospital quality and efficiency, and reports on variations in resource inputs, utilization, preference sensitive care, resource variation at the end of life and outcomes of care.

- In a few parts of the country, hospitals and purchasers are beginning to discuss global payment or risk sharing to create better long-term financial alignment.
- Many proposals for bundled payment have been approved for dozens of illnesses.

It is important to evaluate both the direct and indirect impact of efficiency on resource use and revenue. From a buyer perspective, there is a direct impact (claims equal expenses). However, the impact on hospitals or physicians is far more complicated. Improved quality or efficiency may reduce revenue, given a historic reimbursement system built around production and service volumes. For example, in many states, carriers pay hospitals based on per diems (daily rates) or as a percentage of billed charges. Efficiency improvement will reduce the expenses within the hospital, but it will also reduce revenue (as a lower length of stay reduces the revenue of the hospital). This has a major impact on short-term results and this financial challenge will discourage efficiency initiatives unless carefully measured and managed. This is also one of the major drivers for payment-reform discussions.

The Inventory summarizes the following organizations with major public material on hospital efficiency.

- 3M Health Information Systems
- Dartmouth Atlas of Health Care
- The Hearst Corporation
- OptumInsight
- Milliman
- Truven Health Analytics (formerly Thomson Reuters)

Some organizations listed in section 5.1 have public material related to hospital efficiency.

In addition to the programs above, many organizations with a broader role address this within a larger context. As an example of this larger context, programs that measure total costs or resources deal with hospital efficiency either directly or indirectly.

This report focuses on performance measurement for providers across multiple locations, not within a particular organization. Many other firms that concentrate on performance improvement in individual hospitals are not listed in this report.

5.4. Outpatient/Physician Quality

Although quality at the physician level remains challenging to measure, new technology, financial support for the federal Measureable Use standards, work on attribution methods, and the physician's role within PCMH and ACO programs are creating improvement. This is spurred by CMS and various ACA provisions related to physicians, including commitments to far deeper physician reporting and feedback programs. There is high energy on these topics, but measuring quality and efficiency of outpatient care is more difficult than measuring inpatient care.

Although there are pockets of very strong local success, national measurement across the entire physician industry remains challenging. There are many reasons for this difficulty, such as the decentralized outpatient system, the relatively small size of physician operations, the difficulty of classifying services consistently, and the wide-ranging intensity of the cases managed in an outpatient setting. Also, since multiple physicians often work with each patient, a major challenge for physician reporting is how to attribute or assign the results for a particular patient to a specific physician. Ensuring comparability between providers is also complicated.

Therefore, measurement of physician quality continues to move at a different pace and direction from hospital quality. Recent developments in physician quality include the following.

- Physician quality metrics are included in various ACO, bundled payment and primary care support initiatives.
- The Stars program for Medicare Advantage pays bonuses based on quality.
- Leaders in the provider community are deeply committed to support physicians with strong and more timely clinical data submission.
- The federal PQRS reviews and distributes physician results.
- Bridges to Excellence conducts formal reviews of physician quality to recognize and incent physician performance.
- Some specialty associations have taken a strong role in collecting and validating quality metrics for their specialty. For example, the American College of Cardiology created the National Cardiovascular Data Registry (NCDR) used for a variety of studies and measurement.
- Many states publish results for specific illnesses, treatments and procedures, such as cardiac surgery.
- Automated systems have been created to send reminders to physicians and/or patients about gaps in care
- Reporting of specific metrics such as HEDIS is growing. In some states, this works within a formal P4P program, such as the multimillion dollar program run by IHA.

The Inventory summarizes the following organizations with major public material on physician quality.

- Active Health Management
- AQA Alliance
- HCI3's Bridges to Excellence
- Californian Association of Physician Groups (CAPG)
- Health Benchmarks Inc.
- Health Dialog
- Healthgrades
- National Cardiovascular Data Registry (NCDR) from the American College of Cardiology
- OptumInsight
- Pacific Business Group on Health (PBGH)
- Physician Consortium for Performance Improvement (PCPI), an American Medical Association affiliate
- RAND

- Resolution Health
- Truven Health Analytics (formerly Thomson Reuters)
- Zynx Health

5.5. Physician Efficiency and Resource Use

The role of physicians in the health care delivery system is crucial. There have been major discussions around the PCMH, and support for primary care physicians, value-based payment, ACO, collaboration and team-based medicine. There are many investigations and pilots underway to support, measure and reward physicians for their behavior. A few key examples are outlined in section 6.

Many of these concepts are also built into ACA. The law allows the new CMS Innovation Center to expand and develop new approaches to physician support and payment reform over the years. For example, the Comprehensive Primary Care Initiative (CPCI) changes the reimbursement structure for primary care physicians. In addition, various network and pay-for-performance initiatives have already started in the private sector. These programs were discussed in previous sections.

There are major initiatives to measure and endorse outpatient and physician efficiency measurement by the organizations listed in section 5.1.1. This section highlights organizations with a strong role in physician efficiency. Organizations mentioned in other sections have resources on this topic as well.

As mentioned previously, measurement of total cost, both inpatient and outpatient, is more difficult than inpatient measurement, and efficiency measurement is more difficult than quality measurement. Some challenges can be fixed using the right tools, such as varying fee schedules in the private sector. Other challenges are more complicated and require additional data or judgment, including sample size, attribution to providers, specialist identification, risk adjustment and patient responsibility.

Key recent developments include:

- Core metrics for measuring episodes of care for efficiency measurement have been expanded and revised. Stronger risk adjustment and severity adjustment tools have been developed.
- Many physician societies and the ABIM Foundation have released a summary of treatments are overused
- Some physicians already measure individual provider performance internally for provider improvement or system management.
- Faster technology allows sensitivity testing of core questions.
- Physician metrics are used to develop new alternative networks in some locations, such as the Massachusetts GIC or California Public Employees' Retirement System (CalPERS).
- The underlying tools are becoming more transparent. Summaries of physician measurement approaches used by carriers are required by New York. Vendors such as

OptumInsight present the deep summaries of episode measurement tools to people who register on their website.

- Specialists in some locations are very active in managing the quality and cost of their patients.
- Primary care fees are being increased in exchange for broader physician roles in quality and efficiency performance.
- Financial rewards are available for physicians who reduce preventable complications or use less invasive treatment.

These approaches continue to be developed and modified as the health care industry works to tie metrics to real world working conditions.

The Inventory summarizes the following organizations working on physician efficiency and resource use. In addition, some organizations listed in section 5.1 are also focused on physician efficiency and resource use.

Note: The organizations and products listed below measure resource use of individual physicians or groups of physicians.

- Cave Consulting Group Inc.
- Episode Treatment Groups (ETG) – from OptumInsight
- Medical Episode Grouper (MEG) – from Truven Health Analytics (formerly Thomson Reuters)
- PROMETHEUS Payment System – from HCI3
- Patient-Centered Primary Care Collaborative (PCPCC)

On a final note, surveys of patient experience are sometimes used as measures of quality (such as Consumer Assessment of Healthcare Providers and Systems, or CAHPS). However, survey-based measures and self-reported results are outside the scope of this report.

5.6. Patient Health Measurement and Illness Prediction

When measuring either overall system performance or the performance of individual providers, it is important to adjust for the differences in the level of underlying patient health. This is even more important under many new ACO and PCMH initiatives, where the providers are accountable for total cost—often with a component for formal risk adjustment.

As the providers get involved in these topics, multiple approaches are being tested.

- Different versions of these methods need to reflect the insured population, such as Medicare, Medicaid and commercial.
- Various data sources are used: claims data, clinical data (such as lab results), patient-reported status and functional status, among others.
- Some models measure and compare historic (“retrospective”) results. Other models predict future costs and/or identify future high-risk patients (“prospective” models).

This is a rapidly changing field given the wide variety of goals, type of expert, data sources and approaches being used.

- Risk assessment or risk adjustment systems based on prospective results use claims-based models to measure the risk of populations. Risk adjustment techniques are used in programs like Medicare Advantage and some ACOs. This typically is applied to large groups of individuals. For instance, explained variation for groups greater than 500 can exceed 90 percent.³⁰
- Risk adjustment is also used to align incentives and avoid gaming the system by providers or carriers.
- Various data sources, such as tracking HbA1C levels for diabetics, can be used to identify patients with chronic illnesses and track performance for the provider, health system or carrier.
- Identifying high-risk patients (or potential hospitalizations) is becoming an industry within itself, given the massive quality and cost implications of serious illnesses. This is used to provide additional patient support and prioritize resources.
 - Claims-based predictive models can be developed, supplemented by other data sources and then used to identify potential risky patients.
 - Archimedes Inc. has reviewed the clinical literature to quantify the potential risks given specific patient characteristics.
 - Humedica Inc. has developed illness-specific models based on an analysis of clinical data from electronic medical records.
- Some organizations are using nontraditional data sources, such as personal health assessments, readiness to change, functional status, behavioral style or social status to customize actions specific to these individuals.

The following list summarizes the many diverse programs being used. The Inventory summarizes the programs in the first list; the second list is provided as an extra reference.

Programs in the Inventory

- Johns Hopkins University's Adjusted Clinical Groups (ACG)
- MEDai Pinpoint Review
- MEDai Risk Navigator
- Milliman Advanced Risk Adjusters (MARA)
- OptumInsight's Episode Risk Groups (ERG)
- Verisk Health's DxCG Intelligence

Programs not in the Inventory

- Charlson Comorbidity Index (CCI)

³⁰ American Academy of Actuaries, "Risk Assessment and Risk Adjustment," Issue Brief, May 2010, http://www.actuary.org/pdf/health/Risk_Adjustment_Issue_Brief_Final_5-26-10.pdf.

- Chronic Disease Score (CDS)
- Combined Predictive Model (CPM)
- High Impact User Manager (HUM)
- Humedica
- Integrated Health Partners' Risk Stratification Tool
- Patients at Risk of Re-hospitalisation (PARR) case-finding tool
- Predictive Risk Stratification Model (PRISM)
- Scottish Patients at Risk of Readmission and Admission (SPARRA)
- Sussex Predictor of Key Events (SPOKE), also Sussex CPM
- Triage Risk Screening Tool (TRST)
- Verisk Health's Sightlines Medical Intelligence

5.7. Other

Given the prominence of this topic, there is substantive research from various organizations with a visible and powerful overall presence in health care. Although these groups are not directly involved in formal measurement for specific hospitals or physicians, their articles are strong sources of information. Many of their articles is referenced within the report or Inventory.

The quality of articles varies widely, even within the same source. The more substantive are peer-reviewed articles; there are also perspectives, issue briefs and blogs at varying levels of quality. Also, abstracts of articles are free, while the substantive peer-reviewed journal articles require a fee.

- Some material is monthly. For example, *Health Affairs* has many substantive articles on health reform, accountable care, value-based payment and other key concepts.
- Organizations such as the Brookings Institution, Commonwealth Fund, Dartmouth Institute, Mathematica Policy Research, *New England Journal on Medicine* and RAND fund and/or produce major studies.
- Others, such as *Becker's Hospital Review* and Kaiser Family Foundation, provide frequent updates.
- In addition, major consulting firms or major collaboratives, such as Booz & Company Inc., Deloitte Development LLC, Optum, Milliman, and Premier Inc. have developed white papers or provide periodic updates on value-based payment, accountable care, patient-centered medical homes and related topics.

Links to a few key references or articles are listed in Appendix C. Society of Actuaries reports and presentations pertinent to these topics are included.

The Inventory summarizes the following additional organizations with a visible presence in health care.

- AMGA and its Council of Accountable Physician Practices (CAPP)
- Brookings-Dartmouth ACO Learning Network

- Brookings Institution's Engelberg Center for Health Care Reform
- The Commonwealth Fund
- The Hearst Corp.'s Map of Medicine
- RAND Corporation
- Robert Wood Johnson Foundation
- WebMD

6. Initiatives (Value-Based Payment and Accountable Care)

The industry is moving quickly from measurement to initiatives. Although the initiatives are very diverse, there are several fundamental principles and concepts behind the many programs. This section will

- Outline the principles underlying payment and system reform
- Summarize the broad frameworks of ACO and PCMH
- Describe key value-based payment approaches
- Discuss implications of the new financial incentive

In addition, the Issues Brief “An Actuarial Perspective on Accountable Care Organizations,” from the Academy of Actuaries summarizes many key financial and actuarial implications.³¹

Several initiatives backed by extensive websites and/or a commitment to open public disclosures are outlined in Section 6.2 below.

Each major type of initiative has a specific purpose. Each initiative responds directly to a particular management, financial or structural problems within the health care system. Some are based on an improved infrastructure to the health system, others on payment and others on particular illnesses. Each of the following examples will be discussed more below.

- Accountable care organizations create provider responsibility for quality and cost through an organization rather than a fragmented, decentralized delivery system.
- Patient-centered medical homes focus on the potential for enhanced primary care to improve patient outcomes. The financial incentives for the primary care physician are increased and aligned with the new responsibilities.
- Bundled payments focus on care around a particular illness or event (such as treatment before and after a major hospitalization).
- Global payments (or new versions of capitation) address integration of services and directly connect the goals of the individuals and organization to the providers. Right now, most buyers pay for health coverage per person yet service providers are not paid per person. Under the new system, the provider takes increased core responsibility for overall cost and quality.

6.1. Fundamental Principles

There are many initiatives and pilots either underway or being rapidly developed.

³¹ American Academy of Actuaries, “An Actuarial Perspective on Accountable Care Organizations,” issue brief, December 2012, http://www.actuary.org/files/ACO_IB_UPDATE_Final_121912.pdf.

As discussed earlier in this report, the health system faces dual challenges—a fragmented health system and a payment system focused on production and not accountable for results. Fundamental business principles imply that a different approach is needed. The right individual needs the responsibility, authority and tools to make the right decision at the right time. In concept, a provider-based ACO often can apply an additional toolkit of solutions to the financial and quality problems through closer working relationships with their underlying providers.

There are three fundamental questions and principles underlying most initiatives.

Who should act?	A more responsible health system is needed. Each initiative identifies an entity (provider-based organization or individual provider) willing to accept financial and quality responsibility for patients.
How should providers be paid?	Modernize the payment system and align financial incentives for quality and efficiency. Also, offer incentives to reduce waste.
How should system and payment be linked?	Most initiatives offer an improved payment structure to providers in exchange for additional responsibility. These payments fund improvements in quality and financial results.

Some of the literature mixes the system and payment reform concepts (an ACO may be defined as both a hospital and the shared savings arrangement). However, it is easier to analyze if the system and payment concepts are first addressed separately.

Leaders in the provider community are pushing for comparable initiatives across the three major buyer segments (Medicare, Medicare and commercial lines-of-business). This makes execution by the provider community less difficult—with easier implementation and important economies of scale. The alignment across lines-of-business has improved although many details remind different.

These programs assume a strong role for measurement combined with clinical-based decisions. This permits a detailed focus on how care is delivered and resource use that is clinically sound.

6.1.1 Who Should Act?

Each initiative must identify “who should act.” Some programs use “who” as the starting point. ACOs identify one organization (with underlying hospitals, physicians and other providers) which takes responsibility. Patient-centered medical homes typically start with primary care physicians (and their staff).

Other initiatives start with illnesses, then find patients and the providers connected to these patients. For example, bundled payments and chronic care programs use this approach. They often start with either the hospital, other facility or specialty provider for their initiative.

The structural implications can either be very focused on a specific organization or done on a common basis across the community. Details are still being defined and revised. It is important to review the details of any program; two programs may be called by the same generic name but have very different particulars.

Accountable care organizations: Action within the fragmented and decentralized health care system is challenging. One potential solution is to work through organized delivery systems within local communities. There are a few existing examples of organizations (hospitals and physician groups) that accept accountability for quality and efficiency in their communities. These organizations are being discussed as models. Brookings and Dartmouth have taken a major role in forging this concept and developing a broad learning network across the country.

Patient-centered medical homes: Pilot programs are running or in development in most of the country. These range from basic to extensive initiatives. NCQA has developed a formal accreditation process for these programs.

Many PCMH programs focus on support for the uninsured Medicaid population with better data, primary care and pediatric physicians, avoidance of admissions or emergency room visits, and other patient support. However, these programs have been extended beyond these members. The concept is being applied in both major urban population centers as well as rural environments.

High-performance networks: Various alternative networks are already available for individuals in some major states. These networks are often the foundation for Medicare Advantage programs or developed by carriers. Some networks focus on quality, others on efficiency, and some on both. These alternatives are offered to employees through their companies or directly to insured individuals. When done correctly, these provide meaningful choices to members and reward high-performance physicians and hospitals with recognition and higher enrollment.

The underlying structure and tasks can vary widely. A jointly owned hospital-based ACO and insurance company has different capabilities and constraints than a standalone group of primary care physicians in a PCMH.

Key organizations have spent significant time and energy tracking these programs and developing websites. For the PCMHs, the Patient-Centered Primary Care Collaborative has a major site with information on many initiatives. The National Academy for State Health Policy tracks Medicaid programs. For federal ACOs, the CMS programs are listed on a single website. Summaries of private sector programs are available but typically require a subscription.

The newer initiatives anticipate a much more extensive role for providers than previous initiatives; some management functions move from the insurer (or buyer) to the provider

system. The new role can be challenging for the provider community, although previous high-performance networks or P4P programs can provide hands-on expertise and a mental framework as a foundation for deeper initiatives. For example,

- From the perspective of the provider, the ACO concept can be an extension of clinically integrated networks.
- From the perspective of the individual buyer or insurance carrier, the new program has the potential to extend the high-performance network concept into more locations.
- Payment reform extends the underlying concept of existing pay-for-performance programs. However, as one major distinction, P4P systems provide supplemental payments within the existing fee-for-service structure. Therefore, these programs do not change the underlying financial incentives. Value-based payment can still include pay-for-performance within the overall structure.

All of the newer initiatives start from a common premise: Physicians and hospitals should be encouraged to achieve high performance through financial rewards, increased membership, administrative support and/or gain sharing back to the provider community.

6.1.2. How Should Providers Be Paid?

In many cases, the providers are driving these changes. Hundreds of providers are voluntarily joining new system and payment reform initiatives at the federal and state level. In many ways, although some of the words remain the same, provider-based payment reform is a fundamental shift in paradigm from the perspective of hospitals, physicians, and other providers.

As the industry takes more responsibility for quality and efficiency (resource use), many initiatives are using several approaches.

Quality

Quality payment is typically based on formal, generally accepted metrics. The metrics are often directly targeted to the specific illness or type of provider (hospital, specialist, primary care). They can also be measured across the entire population. In addition, performance on quality metrics is typically required before any other payments for cost or efficiency can be made.

Formal payment systems between buyer/payer and provider often use a subset of the entire range of options. The CMS ACO program has chosen 33 major metrics for its final standards—half of the original proposal.

However, a much wider set of metrics is used for performance improvement internally. Hundreds of quality measures are used for programs to identify gaps in care at the patient level.

Cost or resource use

Many initiatives are moving to value-based payment, sometimes called payment reform. In some cases, leaders in the provider community are pushing for new payment arrangements. Existing payment systems sometimes provide incentives for poor care such as complications and do not reward value. No payment is provided for some important coordination efforts.

The existing fee-for-service system also creates a very difficult business challenge, especially for hospitals. Historically, more services lead to more revenue, which leads to more income. Often reducing waste will eliminate expenses but also reduce the income of the hospital. The innovating providers are investigating improved payment systems.

At a more detailed level, a wide range of cost and resource-use measures is used, given the complexity of financial results.

The formal payment systems between buyers/payers and large providers has a similar range. Depending on the business goals, financial arrangements range from

- Small per-member payments for startup and selected services
- Illness-specific targets, such as bundled payments or complication reduction
- Targets payments around initiative (such as readmissions)
- At the high end, payments can be tied to the total cost of care, such as shared savings programs or total capitation, or partial capitation
- In some cases, specific financial sub-targets can be set for particular initiatives within a broader financial arrangement.

This same range of options can be used for transition arrangements, which can be highly important in stabilizing short term financial results.

The list below defines the major approaches.

Bundled payments: The existing fee-for-service payment system creates misaligned incentives for hospital and physicians. For most treatments, such as a knee replacement or, each physician and organizations sends a separate bill. For other major purchases, like a car (or even health services not covered by insurance like Lasik eye surgery), there is a single payment for the entire purchase. This has occasionally been used in the health industry for special illnesses like coronary artery bypass graft (CABG). Under bundled payment, there would be a total payment for this type of treatment to encourage integration, quality and efficiency resource use.

Capitation/salaried: Capitated or salaried programs create different incentives than fee-for-service payment structures. These payment systems work in several key states and Medicare Advantage programs, often in conjunction with staff-model or physician group HMOs. Often, the base capitation is supplemented by bonus payments to encourage quality, service, efficiency or other nonfinancial targets. These capitation approaches can also work in concert with other initiatives discussed in this section. Capitations can also include demographic or risk adjustment.

Global payments: A fixed overall payment per person to key organizations, such as major hospitals, would align incentives between payers and providers. There are a variety of alternatives being discussed. For example, according to the Massachusetts

Payment Reform Commission, “Global payments prospectively compensate providers for all or most of the care that their patients may require over a contract period, such as a month or year. Usually estimated from past cost experience and an actuarial assessment of future risk related to patient demographics and known medical conditions, global payments reflect the expected costs of covered services.”³²

Partial global payments: Unlike many other new payment approaches, there is not a consensus definition of partial global payment. For example, under one concept, a global payment approach can be applied but only to one major subset of payments. For example, a physician could be responsible for all physician services. Or a group of physicians could take responsibility for outpatient services (excluding outpatient pharmacy).

Pay for performance: There has been substantial growth in pay-for-performance programs across the country. These programs reward physicians for strong performance. P4P programs vary significantly in size and financial commitment. There are formal ones that have been running for multiple years with significant funding and others are small pilots. Some are run statewide by local coalitions, medical societies, insurance carriers or Blue Cross organizations. Pay-for-performance programs are common in HMOs and are expanding in PPOs.

Primary care payment reform: There is broad discussion about how to support primary care physicians. Options include substantial systems support and potential reform of the payment systems. For example, the existing fee-for-service reimbursement system does not pay for phone calls or prescription refills. Primary care physicians are also paid by salary or capitation in some parts of the country. Many options are being discussed and tested.

Reduction in readmission rates: Recent studies have shown very high readmission rates in Medicare and other programs. This creates both a quality and cost problem within the Medicare payment system. There are major initiatives underway to reduce readmissions.

Reduction in complication rates: The existing payment system rewards complications. Complicated cases often receive far higher total payments. As a result of this situation, a reduction in complications improves both quality and cost. Several key programs, such as hospital programs to reduce “never events” or PROMETHEUS, work to reduce complications through a collaborative effort with physicians, hospitals and/or carriers.

Shared savings: Many initiatives are intended to reduce the trend in health care costs. This effort requires time and resources. Also, these new programs can be hard to implement at the provider level. Therefore, sharing eventual savings has been proposed as one way to fund these programs and reward responsible providers. Shared savings are extensively used by CMS and some private sector programs.

³² Massachusetts Special Commission on the Health Care Payment System, “Recommendations of the Special Commission on the Health Care Payment System,” July 16, 2009, <http://www.mass.gov/chia/docs/pc/final-report/final-report.pdf>.

Often multiple programs are used in combination. For example, the Blue Cross Blue Shield of Michigan programs use both pay-for-performance and patient-centered medical home techniques.

6.1.3. How Should System and Payment Reform Be Linked?

Various initiatives are underway to link system improvements to payment reform. There are many different stages of implementation including:

- New startup or long-standing programs
- Minor expansion or substantive revision
- Limited local pilots or significant statewide initiatives
- Proprietary programs or visible public initiatives
- Expansion from one line-of-business into another, such as
 - Medicare Advantage into commercial business
 - Aligning quality metrics
 - Common payment methods (such as hospital inpatient care)

Many initiatives involve a collaborative approach across key players in the marketplace. For example, several ACO projects match the clinical expertise (hospital or physician group) with the carrier infrastructure. In other cases, the catalyst for these pilots comes from key local employers or coalitions.

In the short term, various initiatives within each community move at different paces and in varying directions. Ultimately, these initiatives will be far stronger if the public and private sector initiatives are at least aligned within each community. The opportunity (an integrated approach is adopted by Medicaid, Medicare and/or local carriers) has energized the hospitals and physicians in some states.

Many initiatives are still in the early phases of development. Consequently, much of the early focus is operational or political, rather than financial. Often, the measurement is just beginning. Contracts, financial agreements and value-based payment provisions are complicated to negotiate and administer. As mentioned previously, the issues brief from the Academy of Actuaries summarizes many key financial, business and actuarial implications of ACOs. Similar implications hold for other system and payment reform initiatives.

The Inventory (Appendix D) summarizes website information from many initiatives.

6.2. Real-Life Initiatives: Examples (with details in Appendix F)

Many initiatives to measure results and improve performance are underway. The scope and breadth of these programs varies widely. To illustrate the diverse approaches, several initiatives have been chosen as examples. Each example meets at least six of the following criteria:

- Unique and potentially powerful concept(s)
- Performance improvements in both quality and efficiency
- Collaboration across multiple organizations, (both buyer and provider)
- Applicable across multiple lines of business (Medicare, Medicaid, commercial)
- Deep and visible web material
- Includes powerful financial incentives
- Operational for years with demonstrated results
- Review by outside organizations (and/or published)

These sites show just seven of the resources available and powerful initiatives being implemented. This is not a recommendation for these particular organizations, initiatives, or underlying products.

Detail on each program is available in the Inventory.

- Agency for Healthcare Research and Quality's (AHRQ) Innovations Exchange
 - <http://www.innovations.ahrq.gov/>
 - National data base and ongoing education about major innovations with significant pre-screened material
- Blue Cross Blue Shield of Michigan Value Partnerships
 - <http://www.bcbsm.com/providers/value-partnerships/value-partnerships-overview.html>
 - Statewide collaborative including carriers, hospitals, and physician groups. The initiative uses financial incentives and builds off models such as Patient Centered Medical Homes. Very deep web material is available.
- Blue Shield of California / Dignity Health / Hill Physicians
 - <https://www.blueshieldca.com/bzca/about-blue-shield/health-reform/our-involvement/healthcare-quality-value/aco/fact-sheet.sp>
 - Extensive collaboration between a hospital system, major physician group, and carrier which produced significant performance improvements
- HCI3 Prometheus
 - http://www.hci3.org/what_is_prometheus
 - Introduced two widely-used core concepts of alternative payments: Identify technical risks that providers can potentially manage (if financial incentives aligned) and formal payments to reduce complications

- Health Affairs
 - <http://www.healthaffairs.org/>
 - Monthly peer-reviewed articles focused on the changes in the health system – typically several articles focused on measurement and performance

- National Cardiovascular Data Registry (NCDR) from the ACC American College of Cardiology
 - <https://www.ncdr.com/webncdr/>
 - National disease registry with deep clinical references and supporting educational and created by a specialty society

- State of Arkansas – provider payment initiative
 - <http://www.paymentinitiative.org/Pages/default.aspx>
 - A statewide program across Medicaid and commercial programs to reward providers for quality care at appropriate cost on selected episodes of care

7. Future Research Implications

The health care industry is continually evolving, making it crucial for health care professionals to stay up to date. In the area of health care quality and efficiency, there are many continuing research and education initiatives that would provide valuable insights and lead to new developments.

This section focuses on that research—and the next generation of tools actuaries need to be industry leaders.

1. **Efficiency:** Nationally, there has been a massive expansion of provider engagement in measurement and improvement in quality metrics at a micro level. Although accountability for total costs has been accepted by many provider organizations, the deeper public discussion around efficiency and related metrics has been limited. Measurement and related initiatives are central to actuarial expertise. And, in the short term, we have unique insights into claims data, gaps, value of weighted averages and other core concepts. Actuaries could and should have a strong role in determining these metrics.
2. **Value-based payment:** There are many approaches and concepts for provider measurement, payment reform, and accountability. Many of them overlap. An integrated master system is needed. An inventory and major analytical study of the implications of various new payment options would be very powerful.
3. **Attribution:** Many of the new ACO and PCMH initiatives take responsibility for a subgroup rather than the full population. This impacts risk and selection—with a major impact on the stability of costs, ultimate payments and other measures. Initiatives may be focused on Medicare, Medicaid, insured or self-insured populations. The implications of various attribution methods could be quantified.
4. **Networks (overall results):** To a large extent, a foundation of the system transformation is networks (whether called high performance, ACO, PCMH, etc.). There are a number of alternative networks already available to insured and self-insured populations in the private sector and through Medicare Advantage in the public sector. Existing programs could be evaluated; best practices could be identified.
 - a. For many pilots, quality has improved (with PGPs, carrier-based networks and various pay-for-performance programs). However performance on affordability (efficiency, resource use, reducing the cost trend) has been mixed poor. However, a handful of programs have reported strong quality and financial performance. In addition, there are a number of successful private sector networks. We can inventory promising programs and determine why they work.
 - b. There are many summaries of the core capabilities for new or expanding high performance networks about how to improve quality, clinical leadership and other topics. However, there are few summaries of core financial competencies. We can create this summary.

5. **Networks (internal measurement):** Performance of the system depends on the communication, education and management of the providers within these networks. Also, there are many different initiatives being used under the general heading of value-based payment systems. We could inventory the underlying metrics and analytic challenges that support network development. (Note: This focuses on the use of metrics with physicians rather than the overall use by managers discussed in prior bullets.)
6. **Predictive modeling (next generation prospective risk adjustment):** Management of high-risk patients is getting massive attention given the quality and high costs. A core element of this is to identify the actionable patients and customize approaches to communication that will help them get control of their illnesses. The traditional claims-based prospective risk scores are being substantially modified. Major health information technology improvements offer new clinical data, more timely access to information, and integration of other sources such as social/economic profiling or personal health assessments. Many clinical efforts are underway to develop a stronger predictive model. Given our deep experience with claims-based predictive modeling, we could create the next generation analytic system. This could be done either by financial experts alone or in connection with clinical experts.
7. **Risk adjustment (retrospective):** Risk adjustment is being broadly used to review high-performing networks. As the predictive modeling becomes updated for new data and information sources, the core risk adjustment systems will need parallel revision.
8. **Gaps in existing performance and expected impact:** Given the goal of affordable care, it is important to understand the dollars and cost drivers. Actuarial and financial involvement in the early development of new programs can help set priorities. The SOA could create a structure to support actuaries in the early stages of projects. At the same time, we can articulate our existing strengths on these topics, so that the new HPNs know they should use our expertise.
9. **Efficiency/affordability connection:** Efficiency and quality have a major impact on affordability. Given the major affordability issues facing all health care system stakeholders, a report that directly and explicitly connects these two topics would be useful.
10. **Provider expense management (broad re-engineering or focused initiatives):** Providers, particularly hospitals, are analyzing their internal expenses and developing models to identify problems and manage these expenses. A major component of payment reform is requires a balance between reduced internal expenses while dampening the reduced revenue during a transition period. A similar situation occurs with bundled payment projects. We could summarize these existing techniques.
11. **Local market impact:** *The New Yorker* article about small town Texas medical costs cited earlier talks directly about measurement and costs for Medicare in a local marketplace; follow-up articles have been written. There are also published articles on price differences across communities. Comparable articles could be written about programs offered to insured individuals and self-funded employers.

12. **Other topics:** Research could be done on important related topics excluded from the measurements in this report, including systems (electronic medical records versus disease registries), comparative effectiveness, patient service and perceived patient quality. There is also wide discussion of the start-up expenses for provider-based programs. Studies of these topics could provide additional background and information for financial experts.

8. Summary

In conclusion, the health industry is in the middle of extraordinary times. These topics will be highly important for years.

- Skyrocketing number of real-life initiatives
- Change happening throughout the system (hospitals, doctors, carriers, and individuals)
- Easier access to a greater depth of data and information
- Additional real-time information such as electronic medical records, lab data and other extensive clinical information

These new developments in health care reform create challenges but also a wealth of opportunities: improved measurement, stronger communications between stakeholders, earlier prediction of serious illnesses, and better results on quality and resource use. Individuals with financial and analytic expertise are essential to creating an improved and financially sustainable system for ourselves and our community.

The authors hope this report helps readers understand these resources and prepare for this changing health care landscape.

Appendix A. Definitions of Categories for Programs in Data Inventory

1. **Accreditation, certification:** Products such as published standards based upon defined and agreed-upon best-practices of an accrediting/certifying organization; a health care organization undertaking the action of accreditation through an evaluative process in which the policies, procedures and performance are self-reviewed and externally examined. The primary purpose is quality oversight with a view to establishing whether the health care organization exceeds, meets or has not met published standards, resulting in some sort of formal acknowledgment or designation of status achieved.
2. **Analytics, decision support, health care data technology:** Data technology vendor or product that gathers large amounts of information and either provides authoritative analytical information or the means by which an organization can generate/analyze information (such as episode-grouping tools); also may assist with clinical decision-making. The intention is to assist an organization with analyzing its results/performance to improve health care quality and/or efficiency or to inform and align clinical decision-making with best-practices.
3. **Incentives, rewards programs:** Alignment of providers' financial incentives with quality goals; motivate and reward improved performance or reward exemplary performance on targeted dimensions of health care quality through various means such as pay-for-performance, pay for quality improvement, financial incentive, bonus and reward.
4. **Performance ratings, reports, scorecards, benchmarking:** Organization or product that examines/analyzes/categorizes/reports on the way in which a group or organization performs and/or accomplishes its important functions or processes; use of qualitative and/or quantitative measures of care and services developed to gauge/interpret processes and outcomes. This involves analysis of performance measurement data into contextually useful information to drive quality and efficiency improvement. Performance measures may include measures of clinical quality and process, patient outcomes (health attained, mortality and morbidity), patient perceptions of care, organizational structure and systems. Results would be provided in the form of a rating, report card or scorecard or measured against an industry benchmark.
5. **Standards setting, industry organizations:** Organizations formed around a specific purpose or subject matter established for the purposes of developing standards and processes or to act on behalf of members. Focus is on common issues of interest, developing widely applicable standards of health care quality and/or efficiency, or health sector analysis identifying areas of future research/action.
6. **Summary for public and consumer:** Organization or product that seeks to promote transparency in the health care industry by a comparative analysis and reporting capability; assists patients to make decisions about their health and guide them regarding quality of care and of providers. This includes gathering and providing information on the performance of health care organizations, enabling the user to compare performance against that of peer organizations using a range of benchmarks. This may include providing users (consumers, providers, employers and policymakers)

with comparative cost, volume and quality information about medical procedures performed at hospitals and outpatient facilities or by providers.

Appendix B. Institute of Medicine (IOM) Definition of Quality³³

Safe: Avoiding injuries to patients from the care that is intended to help them

Effective: Providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit

Patient-centered: Providing care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions

Timely: Reducing waits and sometimes harmful delays for both those who receive and those who give care

Efficient: Avoiding waste, including waste of equipment, supplies, ideas and energy

Equitable: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location and socioeconomic status

³³ These definitions are part of the IOM report *Crossing the Quality Chasm: A New Health System for the 21st Century*.

Appendix C. Other Resources

The Society of Actuaries and American Academy of Actuaries have workgroups, papers, and seminars to these topics

American Academy of Actuaries

- American Academy of Actuaries, “An Actuarial Perspective on Accountable Care Organizations,” issue brief, December 2012,
http://www.actuary.org/files/ACO_IB_UPDATE_Final_121912.pdf

Society of Actuaries

- HealthWatch article
 - www.soa.org/Library/Newsletters/Health-Watch-Newsletter/2013/may/hsn-2013-iss72.pdf
- Subgroup on payment and system reform
 - <http://www.soa.org/professional-interests/health/hlth-aoc-learning.aspx>
- Multiple presentations are available from a seminar devoted to provider payment
 - <http://www.soa.org/Professional-Development/Event-Calendar/Provider-Payment-Reform-Seminar.aspx>
- In addition, there are multiple sessions on measurement, ACOs, PCMHs, payment reform, and related topic at the two major conferences each year: the June meeting focused on health and the annual meeting in October

Appendix D. Inventory of Programs and Organizations

Appendix D contains two- to four- page one summaries of many major programs and organizations based on their web material. Given its size, the file containing Appendix D can be downloaded from the webpage housing this report.

Appendix E. Links to Specific Measures

Over the last few years, descriptions of measures have become much more broadly available. Also, beyond just measures, information on a specific hospital or physician is becoming more available. For example, Medicare information is available on specific hospitals through the Hospital Compare website.³⁴ One other key set of federal metrics is the Physician Quality Reporting System (PQRS).³⁵ However, this information is provided back to physicians, not the general public.

State or local information is often available from state governments, statewide associations or from carriers for their members. So, check for more extensive resources in your specific state or community. Some examples are listed in the report and Inventory (Appendix D). Readers should check locally to see what detailed or supplementary information is available.

For national information beyond government sources, check the following resources:

- **Hospitals:** Leapfrog Hospital Survey Results, <http://www.leapfroggroup.org/cp>
- **Physicians/carrier:** HEDIS measures, <http://www.ncqa.org/tabid/59/Default.aspx>
- **Physicians:** Bridges to Excellence, <http://www.hci3.org/node/1/>

Appendix C provides links to measures that are widely used and provide information about specific individuals or organizations.

³⁴ <http://www.medicare.gov/hospitalcompare/search.html>

³⁵ <http://www.medicare.gov/hospitalcompare/search.html>