

# **Measurement of Healthcare Quality and Efficiency: Resources for Healthcare Professionals Updated**

**Sponsored by  
Society of Actuaries Health Section  
Solucia Consulting**

**Prepared by:  
Greger Vigen, MBA FSA  
Sheryl Coughlin, PhD  
Ian Duncan, FSA FIA FCIA MAAA**

2010



© 2010 Society of Actuaries, All Rights Reserved

The opinions expressed and conclusions reached by the authors are their own and do not represent any official position or opinion of the Society of Actuaries or its members. The Society of Actuaries makes no representation or warranty to the accuracy of the information.

## Acknowledgements

The report authors would like to acknowledge support of the Society of Actuaries Health Section, and particularly the following members of the Project Oversight Group for their assistance in the completion of this effort:

Joan Barrett, FSA, Chair  
John Barela, ASA  
Gayle Brekke, FSA  
John Cookson, FSA  
Curtis Lee Robbins, ASA  
Steven Siegel, ASA, SOA Research Actuary  
Sara Teppema, FSA, SOA Health Staff Fellow  
Michael Thompson, FSA  
Scott Wertz, FSA

In addition, we appreciate the comments received from various people on the preliminary draft of the original report.

Dan Anderson, FSA  
Ray Berry, ASA, EA  
Ken Faig, Jr., FSA  
Lisa Greenberg  
Clay Levister  
Mita Lodh, FSA  
Mac McCarthy, FSA  
Sara Teppema, FSA

## Introduction to Updated Report

This updated report was created to reflect major recent changes in the environment.

The federal government passed the health reform bill, the Patient Protection and Affordable Care Act (PPACA) and related amendments. This creates extensive changes in the direction and opportunities for Medicare and Medicaid. The bill also reinforces and energizes the industry direction on measurement.

Other recent developments move beyond measurement toward action - within the broad goal of accountability and payment reform. This includes payment reform, Accountable Care Organizations (ACOs), and Patient Centered Medical Homes (PCMH).

Existing applications continue to be refined and piloted. This includes stronger approaches to pay-for performance, re-admission reduction, complication reduction, networks, and technical improvements in measurement.

Basic quality measures are much more widely available. Various states, local communities, and carriers provide easy access to web information, often on specific hospital or physicians.

PPACA is reflected throughout the report. There is an entirely new section on Applications. The updated report also adds sixteen new or revised programs to the Inventory (Appendix D). Other written summaries in the Inventory have not been revised, although the weblinks have been updated where needed.

# Table of Contents

Section 1	Executive Summary
Section 2	Report Structure
Section 3	Limitations and Measurement Challenges
Section 4	Importance of Measuring Quality and Effectiveness
Section 5	Overview of Stakeholders and Organizations
	5.1 Organizations with broad role
	5.1.1 National Organizations that Develop and Approve Measures
	5.1.2 Centers for Medicare and Medicaid (CMS) / Health Reform
	5.1.3 Insurance Carriers
	5.1.4 State Programs
	5.1.5 International
	5.2 Hospital Quality
	5.3 Hospital Efficiency
	5.4 Physician Quality
	5.5 Physician Efficiency
	5.6 Other
Section 6	Applications (Payment Reform and Accountable Care)
Section 7	Summary – Implications and Future Potential Efforts
Appendices	
A.	Definitions of Categories for Programs in Inventory
B.	Institute of Medicine Definition of Quality
C.	Other Resources
D.	Inventory of Programs and Organizations (separate PDF file)
E.	Links to specific measures
F.	Applications (selected examples)

# Section One

## Executive Summary

Healthcare quality and efficiency play an important role for both the overall economy and healthcare consumers. Affordable healthcare is crucial to the financial stability of many workers and retirees, making quality and efficiency of programs particularly relevant during periods of economic challenges. Moreover, quality and efficiency occupy a prominent position in the healthcare system reform effort. This is particularly true given the fundamental issues in the United States, such as the decentralized nature of the healthcare system, often poorly-aligned payment structures and the complexity of roles assumed by service providers.

Major healthcare reform legislation, the PPACA (Patient Protection and Affordable Care Act) and the related amendments in Health Care and Education Reconciliation Act of 2010 (HCERA), has passed.<sup>1</sup> In addition, there is substantial federal support for investments in technology for physicians and patients. This greatly changes the landscape in both the short-term and long-term for the health industry. Elements of the act connect directly to measurement, quality, efficiency, and accountability.

Economic and other environmental factors continue to challenge the system. Affordability remains a major goal and problem. As a result, the combination of legislation and environmental challenges create a healthcare industry that is changing rapidly. With this in mind, the Society of Actuaries Health Section and Solucia Consulting have co-sponsored this updated research project. This report reviews and inventories the wide range of quality and efficiency measures currently available for hospitals and physicians.

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 areas of consideration for quality and efficiency measurement, this report also describes future opportunities for actuaries and other health professionals interested in this evolving area.

### **The Evolution of Healthcare Quality and Efficiency Measurement**

The healthcare industry is vast and diverse. It has historically been challenged by data limitations, including inconsistency, lack of timeliness and lack of robust methodologies. Consequently, efforts to measure quality and efficiency were often hindered and relegated to an expensive afterthought. Information systems resources and data analytics have grown at a rapid pace. Measurement is now valued as an essential requirement for improvement.

---

<sup>1</sup> <http://www.gpo.gov/fdsys/pkg/PLAW-111pub1148/pdf/PLAW-111pub1148.pdf>

At the same time, new technology, measurement approaches, applications and other resources for measuring 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 healthcare industry players have recognized the need to measure and improve quality as well as apply new metrics to improve the analysis of the connection between specific illnesses and overall populations.

Reinforcing their relevance, these topics have been discussed in the popular press. For example, the New Yorker article entitled: “The Cost Conundrum” by Atul Gawande MD has garnered much attention.<sup>2</sup> The article provides a perspective on measured differences in quality and efficiency across populations in different cities in Texas. On a related note, an evaluation of results for these same cities for patients outside of Medicare was published in Health Affairs.<sup>3</sup>

Although the healthcare system remains complex, the underlying measurement capabilities continue to improve:

- 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 efficiency metrics that use episodes of care and member risk-adjustment;
- New metrics narrow 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 pilots and initiatives;
- Many state or community pilots on payment reform, complication reduction, Patient Centered Medical Homes, and Accountable Care Organizations
- Pilot programs to reduce complications and re-admission rates; and
- Alternative networks offered to members in major locations based on quality and/or efficiency.

In conclusion, future growth in measurement is accelerating. Factors that will influence this growth include:

- Major PPACA support for quality reporting, payment reform and accountable care;
- Additional resources and federal support for electronic systems and Health Information Technology. This supports real-time access to information through

---

<sup>2</sup> [http://www.newyorker.com/reporting/2009/06/01/090601fa\\_fact\\_gawande?currentPage=all](http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande?currentPage=all)

<sup>3</sup> <http://content.healthaffairs.org/content/29/12/2302.abstract>

resources such as Electronic Medical Records, Disease Registries, and other extensive clinical data;

- Access to a greater depth of data and information for analysis;
- Advanced techniques for predictive modeling, member engagement and decision support.

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 results on quality and resource use.

As a final note, early adopters have created pilot programs in many states. They are moving quickly to implement these programs. There is a strong commitment to start with measuring results and moving to improve health and resources use. With this in mind, the authors hope the report will serve as a timely and valuable reference for healthcare professionals wishing to further enhance their knowledge and become involved in this growing area of healthcare. The Society of Actuaries Health Section has sponsored this effort to help enable actuaries and the public to address these challenges with timely tools and techniques. This report is intended to further understanding of available resources in healthcare quality and efficiency measurement and to prepare for this changing healthcare landscape.

## Section Two

### 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 xx organizations and over xxx 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 does not cover population-based measures like risk adjustment, although these tools are included within Appendix D. These limitations are discussed in more detail in Section Three.

The organizations described have differing technical and business interests and viewpoints. The report does not attempt to reconcile these different viewpoints.

### **Organization of the Report**

#### Sections

- Section One provides an executive summary of the report.
- Section Two outlines the report structure, including research methodology.
- Section Three summarizes the limitations of this study and challenges to measurement.
- Section Four discusses the importance of quality and efficiency measurement topics.
- Section Five summarizes the major categories of organizations that are included in this report. It also highlights new directions on these topics.
- Section Six provides a few key applications as examples of how measurement is being applied to improve results
- Section Seven outlines implications and potential future studies.

The report outlines many available resources but often more detail is available in the appendices.

#### Appendices

- Appendix A – Definitions of Categories for Programs in Inventory.
- Appendix B – Institute of Medicine Definition of Quality.
- Appendix C – Other Resources.
- Appendix D – Inventory of Programs and Organizations.



- Appendix E – Links to specific measures
- Appendix F – Sample applications

### 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 appearing on the websites of these organizations and has been lightly edited for readability purposes. The report's authors did not validate or verify the factual accuracy of information appearing on the organization 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.

Because of its length, Appendix D is available as a separate file on the Society of Actuaries webpage housing this report.

## **Research Methodology**

The original search for sources was based on public information contained on websites and was conducted between November 2008 and March 2009. For the updated report, additional public material was gathered between March 2010 and June 2010.

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 expert opinion of the authors and project oversight group.

It is by no means an exhaustive list, but rather one intended to canvass a wide range of those active in the field of healthcare quality and to then inventory a cross-section of 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 representative examples from organizations that illustrate particularly interesting approaches, innovations, or programs.

The depth of material available on the websites reviewed varied considerably. Some websites 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 websites, such

as those of health plans or employer sites, was restricted to only members. Restricted information is not described. In a few cases 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 several months, the websites of some organizations profiled in this report were re-visited several times in order to ensure that the most current information was captured. Materials contained in the Inventory were directly downloaded from the applicable websites and lightly edited for readability. Web 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 over 200,000 citations on the MedLine search tool for health quality or efficiency measurement.

## **Inventory**

The inventory of organizations/measures/products that were reviewed has been organized into an Inventory document (Appendix D).

The effort of imposing some sort of order to the available material was akin to encouraging an octopus into a string bag – a highly challenging task! Several different ways of categorizing information 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 – provides the reader with an understanding of any particular procedure or set of procedures used in data collection and/or analysis, technical specifications, methodological constraints, and target population. The reader may determine the applicability and relevance to particular areas of interest.
- Results – describes whether there is evidence that the organization or product has achieved its objectives, and undertaken any formal or informal evaluation of efficacy.
- Publications – In some cases only marketing materials were accessible via the website. Where possible, we attempted to include peer reviewed materials, white papers and other formal analyses if available.

For organizations that summarize material or pilots done by other organizations, 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 examples from a few states that illustrate particularly interesting approaches or innovations.

Where it 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 industry-wide. 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 this 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:

1. Accreditation, Certification;
2. Analytics, Decision Support, Healthcare Data Technology;
3. Incentives, Rewards Programs;
4. Performance Ratings, Reports, Scorecards, Benchmarking (actual performance);
5. Standards Setting, Industry Organizations (measurement structure); and
6. Summary for Public, Consumer, and Infomediaries.

Definitions of these categories are listed in Appendix A.

## Section Three

# Limitations and Measurement Challenges

One major set of measurement challenges comes from the healthcare environment. The United States has a large and complex healthcare system, and highly different stakeholder goals and perspectives. In addition, the current fee-for-service payment structure is misaligned. Section 3 first discusses the implications of the environment (structure, stakeholders, and payment systems). The other measurement challenges are technical with numerous definitions of quality and efficiency and many different approaches to measurement. The second part of this section outlines the technical challenges and implications from the rapid pace of change.

### **Large, Decentralized, and Complex United States Health System**

The healthcare system in the U.S. is vast, complex, and far-reaching. It represents approximately one-sixth of the national economy and greatly impacts other parts of the economy. Healthcare costs are covered through various payers: Medicare, Medicaid, employer-based, and individual insurance. Measurement is further compounded by the decentralization of the health system itself.

#### Health System Stakeholders – Purchasers

Medicare, Medicaid, employer-based, and individual insurance programs work with very different populations, programs, data bases, and approaches to measurement. This leads to highly different perspectives on measurement and payment. As examples:

Populations - Seniors covered by Medicare often have multiple illnesses. This creates complex analysis.

Programs - Medicare pharmacy data is decentralized though many different intermediaries. Programs offered by employers generally cover outpatient pharmacy within an integrated program. Consequently, data may be more readily available.

Payment systems – Original Medicare pays most hospital admissions using 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 (PCMH)

in many parts of the country. And, there are numerous of carrier/employer based programs for employers and individual purchasers.

As discussed further in this report, this situation may change substantially over the coming years. There are provisions in PPACA to create and strengthen the health system across the country regardless of payor. This could lead to major opportunities to align organizations, measurement, and payment systems across purchasers of healthcare.

This report considers only Medicare and insured populations - it does not reflect programs for Medicaid or uninsured populations.

### Decentralized Healthcare Systems

Some measurement challenges come from the environment including:

- Hospitals and physicians have very different responsibilities. As a result, they are organized differently, as are their data collection and measurement approaches.
- There are many industry initiatives with different goals. Some are highly collaborative (and public) while others are proprietary.
- Many measures are collected through non-standardized organizational or 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 and include claims-based measures, clinical measures (medical chart-based measures) and measures based on 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.

Besides measuring quality and efficiency, there are also multiple approaches to improving quality and efficiency e.g. reengineering, Continuous Quality Improvement, Six-Sigma and LEAN. These initiatives within hospital departments or physician offices can impact quality and efficiency, but are outside the scope of this report.

### Mis-alignment of current fee-for-service payment 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 followups. In fact, often if the patient does not come to the office, the physician loses that potential revenue.

For hospitals, complications result in far higher resource use than uncomplicated care. But, the payment received by the hospital for complicated care is often much larger. As a result, a program to reduce avoidable complications, such as re-admissions or re-testing causes a loss of revenue. Ultimately then, the net impact is a financial disincentive to control complications.

Solutions to this mis-alignment are fundamental to improved quality and reduced cost. Major payment reform applications are discussed later in the report.

## **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. It excludes pharmacy, durable medical equipment, ambulatory care services, nursing homes, and home health services.
- Process and, if available, Outcome Measures. Metrics of health quality often measure structure and process, although outcome measurement is becoming more common. Process Measures measure 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 Quality Chasm report<sup>4</sup> has also developed six aims of improved quality that are widely used. The six aims are summarized in Appendix B. The focus of this report is primarily the patient safety and efficiency categories discussed by the Institute.

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, staffing
- Clinical chart reviews
- Disparities in care
- Equity

---

<sup>4</sup> Institute of Medicine, Committee on Quality of Health Care in America 2001 'Crossing the Quality Chasm: A New Health System for the 21st Century'.

- 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.

## **Different Approaches to Measurement**

A major challenge comes from fundamentally different approaches to measurement across the sectors of the healthcare 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 medicine 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 what constitutes evidence-based medicine can arise.
- Buyers of healthcare who are responsible for broad populations and funding 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. There are also alternative payment approaches such as capitation.

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 practice level, looking at the proportion of appropriate tests, procedures and medications that are 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 that lie outside of the study.

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

Recently, there have been helpful developments related to this particular challenge. New episode-of-care techniques and patient-centric reminders about their care highlighted in this report provide a framework to improve communication on specific illnesses and help to bridge the micro/macro communications gap.

### **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*, 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.

### **Implications of the Rapid Pace of Change**

PPACA greatly changes the federal environment and has energized many people and organizations that care about health and efficiency. Major elements within the bill directly impact quality and payment reform. The legislation provides new specific authority for innovation, payment reform, and new programs for Medicare and Medicaid programs. In addition, key hospitals, physicians, and carriers are beginning to prepare for 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, and ongoing technology changes - means the measurement of quality and efficiency of the healthcare 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 this material 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.

## Section Four

# Importance of Measuring Quality and Effectiveness

### Overview

Quality and efficiency measurements are used for professional standards, government oversight, professional accreditation, quality improvement, network development, and pay-for-performance programs, public reporting, consumer health education, and purchaser decision-making among other purposes.

Health costs continue to rise much faster than general inflation. The current economic climate has increased interest in healthcare quality and efficiency as healthcare spending has grown while much of the rest of the economy has contracted. According to CMS (the Centers for Medicare and Medicaid),

In 2009 the health share of gross domestic product (GDP) is expected to have increased 1.1 percentage points to 17.3 percent—the largest single-year increase since 1960.<sup>5</sup>

National Health Expenditures (NHE) as a share of Gross Domestic Product (GDP) is expected to be 19.6 percent by 2019.<sup>6</sup>

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”.<sup>7</sup>

The seminal Institute of Medicine (IOM) report – “Crossing the Quality Chasm: A New Health System for the 21st Century” (2001) stimulated significant levels of quality improvement activity. A broad range of healthcare 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.

---

<sup>5</sup> <http://content.healthaffairs.org/content/early/2010/02/04/hlthaff.2009.1074.abstract>

<sup>6</sup> <http://www.cms.gov/NationalHealthExpednData/downloads/NHEProjections2009to2019.pdf>

<sup>7</sup> Congressional Budget Office Testimony. Statement of Douglas W. Elmendorf, Director: “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, March 10, 2009. Washington. [http://www.cbo.gov/ftpdocs/100xx/doc10016/03-10-Health\\_Care.pdf](http://www.cbo.gov/ftpdocs/100xx/doc10016/03-10-Health_Care.pdf) downloaded April 20, 2009

The combination of the financial forces, legislation, and technology has created high activity throughout the industry. The growth in health spending was a major factor leading to the passage of PPACA legislation. The law expands beyond historic measurement approaches. It explicitly offers innovative payment options including payment bundling, reducing avoidable hospital readmissions, and gainsharing. These legislative changes are discussed in for 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 healthcare measurement and outlines important new developments.

## **Varying Approaches to Measuring Healthcare Quality and Efficiency**

As mentioned earlier, the decentralized U.S. healthcare system represents one-sixth of the United States economy. As discussed in Section Three, measurement of healthcare 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 that are actively involved in developing ways of determining healthcare quality and quality improvement. New metrics and technology for measuring gaps in evidence-based medicine and episodes-of-care help organize healthcare data and provide a framework to narrow the fundamental gap between micro measures of specific illnesses, and macro population measurement, approaches. There is an emerging consensus that the measurement of healthcare quality leads to improved healthcare outcomes. And, health reform reinforces this direction.

For the purpose of this report, discussions of quality and efficiency have been separated. However, many influential studies of these topics evaluate both quality and efficiency together, often applied to specific illnesses. This report provides a starting perspective on these topics.

## **Quality Measurement**

The healthcare industry is producing more quality measures that cover more illnesses in a wider variety of settings. For example, core measures, such as HEDIS (Healthcare Effectiveness Data and Information Set) results are now widely available on the Internet. 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 Web and systems support.

In 2006, RAND published the First National Report Card on Quality of Health Care in America. 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.”<sup>8</sup> A comparable report focused on children was published in 2007.<sup>9</sup>

In reaction, key physician specialty societies have been working to review the literature, develop guidelines, and speed dissemination of results. Other organizations are beginning to measure actual results based on these guidelines.

## Importance of Efficiency Measures

The ongoing increases in healthcare costs generate impetus for renewed efforts around efficiency measures. The financial pressures of rising healthcare 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, increasing the share paid by workers, or reducing coverage. According to the Kaiser Family Foundation, “The \$13,770 average annual family premium in 2010 is 27% higher than the average family premium in 2005 and 114% higher than the average family premium in 2000.”<sup>10</sup>

Health cost increases slowed in 2010, but given the recession, still grow far faster than wages,

Even though the share of total premiums that workers pay has grown over the past decade, the rapid growth in overall premium levels means that workers are paying much higher absolute contributions.<sup>11,12,13</sup> Deductibles have also been rising.

The ongoing costs of healthcare and value received by purchasers for their substantial outlays make efficiency a major topic.

---

<sup>8</sup>RAND Health. 2006. Research Highlights. ‘The First National Report Card on Quality of Health Care in America Quality in America’. RAND\_RB9053-2 [http://www.rand.org/pubs/research\\_briefs/2006/RAND\\_RB9053-2.pdf](http://www.rand.org/pubs/research_briefs/2006/RAND_RB9053-2.pdf) Downloaded March 25, 2009

<sup>9</sup> New England Journal of Medicine. ‘The Quality of Ambulatory Care Delivered to Children in the United States’. <http://content.nejm.org/cgi/content/short/357/15/1515> Downloaded July 14, 2010

<sup>10</sup> Employer Health Benefits 2010. Kaiser Family Foundation and Health Research Educational Trust. <http://ehbs.kff.org/pdf/2010/8085.pdf>

<sup>11</sup> Kaiser Family Foundation and HRET. Employer Health Benefits 2008. Op Cit.

<sup>12</sup> J. S. Banthin, P. Cunningham, and D. M. Bernard, Financial Burden of Health Care, 2001–2004, *Health Affairs*, January/February 2008, 27(1):188–95  
<http://content.healthaffairs.org/cgi/content/abstract/27/1/188?ijkey=x1uOF8QUZ.tCo&keytype=ref&siteid=healthaff> Downloaded 27 April 2009

<sup>13</sup> Kaiser Family Foundation. Kaiser Health Tracking Poll. Public Opinion on Healthcare Issues. February 2009. <http://www.kff.org/kaiserpolls/upload/7866.pdf> Downloaded 27 April 2009

## Innovations in Efficiency Measurement

Recent developments show significant potential and greatly expand historical financial analytic techniques related to efficiency or resource use. The following is a quotation from a CMS publication “Medicare Resource Use Measurement Plan” page 1.

([http://www.cms.hhs.gov/QualityInitiativesGenInfo/downloads/ResourceUse\\_Roadmap\\_OEA\\_1-15\\_508.pdf](http://www.cms.hhs.gov/QualityInitiativesGenInfo/downloads/ResourceUse_Roadmap_OEA_1-15_508.pdf))

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

These developments are often built around four concepts behind the measurement of healthcare efficiency.

- Evaluate and reduce variation – A key approach to measuring and improving efficiency is common to many different industries: measure resources and results, investigate why results vary, determine best practices, and then work to reduce the variation. This approach is the foundation for reports like the Dartmouth Atlas which builds on the seminal work of Dr. Jack Wennberg and recent work of Dr. Elliot Fisher.
- Group and measure similar illnesses - The strongest historical example of this approach is the DRG (Diagnosis Related Group) structure which is used by Medicare 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 MS-DRGs (Medicare-Severity DRGs) with more severity adjustments. 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 – 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. But, 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 re-admissions or re-testing result in higher payments than uncomplicated care. The industry is starting to develop and test alternative reimbursement systems as part of payment reform. Many of the applications and pilots discussed in Section Six provide support and financial incentives for clinically sound care.

## **Challenges to efficiency measurement across populations**

Efficiency measures have lagged quality metrics for a various reasons, including system complexity, decentralization, and other factors mentioned earlier in this section. There are four other factors that have slowed efficiency measurement:

- The recommended clinical treatment for a major illness is often the same 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?
- 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. If one organization charges 20% more than another organization for equivalent results, it is more efficient to use the less expensive provider.
- 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 will react to protect their interests.
- Current incentives are misaligned: improving efficiency can lower revenue to 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.

Because of this fundamental difference in goals and 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.

## Section Five

# 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 sub-section describes organizations with broadly-based roles (Section 5.1). The rest of this section lists organizations whose primary focus is within one particular area (Section 5.2-5.6).

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

- NCQA developed national consensus standards for quality metrics with multiple stakeholders. Using these standards, insurance carriers collect data that can be audited by NCQA. 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 NQF and RAND to create quality metrics for physicians. The resulting information is used by private sector organizations such as Active Health, Ingenix, 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 healthcare reform. Organizations with an interest in integrated solutions such as ACOs or Patient Centered Medical Homes and those proposing payment reform alternatives are taking a broader role. In many cases, they are working directly with the historic organizations focused on quality and efficiency to develop applications.



## **Section 5.1 – Organizations with a Broad Role**

### **Section 5.1.1 –National Organizations that Develop and Approve Measures**

There are many national initiatives underway to develop and approve measures of healthcare 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, and
- Facilitate the appropriate use of measures throughout the healthcare system.

Given the increasing importance of these topics over recent years, the major players are moving towards even more coordination and collaboration with each other.

A few examples will provide insight into how these organizations operate.

- The National Committee for Quality Assurance (NCQA) is a not-for-profit organization that started with the development of the broadly-used Healthcare Effectiveness Data and Information Set (HEDIS). They have evaluate on- and off-site surveys, audits, satisfaction surveys, and clinical performance measurement. They offer various accreditation, certification, and physician recognition programs. They also have built the Quality Compass to summarize information on quality improvement and health plan performance.
- The National Quality Forum (NQF) was created to develop and implement a national strategy and standardize national performance measures, quality indicators, and similar metrics. To date, NQF has endorsed about 400 performance measures and practices; for example, the National Voluntary Consensus Standards for Hospital Care: Outcomes and Efficiency and Serious Reportable Events. They are also working on a Consumer Disclosure Project that will provide a framework for sharing performance results in public. The NQF is working to assess efficiency metrics.
- There are a wide variety of Learning Networks being developed by organizations as diverse as Brookings-Dartmouth and the Premier hospital system.
- Summaries of pilots are available from organizations including Blue Cross Blue Shield Association and Patient Centered Primary Care Collaborative.

The following organizations with a broad role are summarized in the Inventory:

Agency for Healthcare Research and Quality (AHRQ)  
American Health Quality Association (AHQA)  
Blue Cross Blue Shield Association  
Brookings-Dartmouth ACO network  
Bridges to Excellence (now part of HCI3)  
Care Focused Purchasing  
Institute of Medicine  
National Committee for Quality Assurance (NCQA)  
National Quality Forum (NQF)  
Patient Centered Primary Care Collaborative  
The Hospital Quality Alliance

## **Section 5.1.2 – Centers for Medicare and Medicaid Services (CMS)**

The Centers for Medicare and Medicaid Services (CMS) is the Federal agency responsible for administering Medicare, Medicaid, and other 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. In addition, it has initiated a number of major pilot programs in all areas of healthcare.

These programs include the Quality Improvement Organization (QIO) and web-based comparative tools such as Hospital Compare. There are also a number of incentive demonstration projects, such as the Premier Hospital Quality Incentive Demonstration and Physician Group Practice Demonstration. CMS uses HCAHPS— a standardized survey to measure patients' perspectives on hospital care.

CMS authority and direction is greatly expanded by the passage of the PPACA health reform legislation. Key provisions are throughout the bill, but most of them are within TITLE III — Improving The Quality And Efficiency Of Health Care. Among the specific new initiatives established by the Patient Protection and Affordable Care Act (PPACA) include:

- Value Based Purchasing initiatives
- Strengthen 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 (ACOs)
- Voluntary pilot to test payment bundling

The law offers CMS much more authority. Historically CMS had a limited ability to expand successful pilots. The new Center for Medicare and Medicaid Innovation (Innovation Center) has authority to extend or expand pilots if they are found to improve quality of care, reduce spending, or both.

In addition, there are various Medicaid demonstration projects and global payment system demonstrations project that are not the focus of this report. These are described in Sections 2101 to 2707 of the consolidated act.

On an ongoing basis, significant Medicare results and initiatives are summarized in various reports by MedPac, the committee that advises Congress on Medicare issues.

Outlines of various CMS programs are included in the Inventory:

- Better Quality Information to Improve Care for Medicare Beneficiaries (BQI) Project
- Chartered Value Exchanges
- Electronic Health Record Demonstration Project
- Hospital Quality Initiative (HQI) - Hospital Compare
- Measures Management System (MMS)
- Medicare Hospital Value-Based Purchasing (VBP) Plan
- Medicare Quality Improvement Organization (QIO) Program.
- Patient Protection and Affordable Care Act (2010) – provisions on measurement
- Physician Group Practice Demonstration project
- Physician Quality Reporting Initiative (PQRI)

### **Section 5.1.3 – Insurance Carriers**

National carriers, Blue Cross / Blue Shield organizations, 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.

The carriers collect and measure data on quality and efficiency. 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 insurers offer members alternative networks based on new quality and efficiency metrics. Some of the alternative networks are focused primarily on quality; others on a blend of quality and efficiency. For example, most California HMOs offer smaller HMO networks based on providers with different mixes of quality and efficiency.

Some carriers participate in pay-for-performance programs in key locations.

Insurance carriers also collect information on patient satisfaction, credentialing, and other quality topics that are outside the scope of this report.

The Inventory shows illustrative programs from a number of organizations.

The information in the Inventory for insurance carriers is often different than information extracted from other organizations. This is due to the different industry role for insurance carriers and their typical audience.

Insurer web sites frequently change and each web site has a unique structure. Topics such as quality and efficiency are often scattered across multiple locations on insurer web sites.

Each carrier has one or two specific topics which are highlighted. For example, one carrier has multiple pages on its physician network criteria, while another focuses on hospital metrics. The Inventory primarily presents only the topics highlighted within a particular carrier's web site.

The primary audience for the carriers is members, not professionals. Therefore, the writing style within carrier websites is more basic than other publications referenced in this report. Carriers are responsible for running broad insurance programs and they organize their web sites around the specific circumstances of members. For example, the web page views may show quality information for only three local hospitals at a time.

Members can obtain more in-depth information that is not available to the general public. For example, more extensive information on network options is available for members. Some sites now show transparent prices for core services. However, this proprietary information is not listed in the Inventory.

Finally, there are a number of carrier pilot programs connected with various local initiatives and payment reform efforts. These include bundled payments, patient centered medical homes, accountable care organization, or reductions in complications or readmission. These initiatives are discussed in the other sections of this report.

The following insurance companies are summarized in the Inventory:

Aetna  
Anthem  
BlueCross BlueShield Association (BCBSA)  
Blue Cross Blue Shield of Michigan  
CIGNA  
Healthnet  
HealthPartners

Highmark  
Humana  
Premera Blue Cross  
United Healthcare (including separate Pacificare programs)

## Section 5.1.4 – State Programs

Powerful new technology, web capabilities, and increasing focus on healthcare costs has led to the creation of many programs at the state level. Some are organized and run by state government or health departments. Others are independent associations focused on state-wide health improvement. Often, these measurements are available to the public.

For example, there are long-standing programs to measure quality and efficiency in most major states. Many offer substantial public information (California, Massachusetts, Michigan, Minnesota, and New York). Topics range from cardiac care to quality of hospitals, physicians, and medical groups. Local communities, such as the Puget Sound Health Alliance in Washington, have also developed strong web sites and programs about these topics.

Many states have moved beyond measurement to applications. This includes multiple pay-for-performance programs, patient centered medical homes, as well as several major state-wide initiatives on comprehensive system reform in smaller states like Vermont and Maine. There has also been an extended public discussion and proposed legislation on payment reform and ACOs in Massachusetts.<sup>14</sup> Given the variety and importance of these new applications, the range of programs is described in more detail in Section Six.

There are wide variations in approaches by state and the results are mixed. However, these initiatives provide interesting insights into the way that healthcare information is measured and can be used to improve performance.

The Inventory summarizes both longstanding and new programs for a sample of states. Programs for other states are publicly available on the Internet.

The following organizations working in key states are summarized in the Inventory:

### California

California Healthcare Foundation  
Integrated Healthcare Association (IHA)  
CCHRI / Pacific Business Group on Health  
Excellus Quality Improvement Program (summary by Blue Cross Blue Shield Association)

---

<sup>14</sup> Gov. Patrick's proposal for payment reform in Massachusetts:  
<http://www.mass.gov/Agov3/docs/Legislation/PaymentReformLegislation.pdf>

Hawaii HMSA (summary by Blue Cross Blue Shield Association)  
Highmark  
Massachusetts  
    Massachusetts Health Quality Partners (MHQP)  
    Massachusetts Health Care Quality and Cost Council (HCQCC)  
    Massachusetts Group Insurance Commission (GIC)  
Med-Vantage (Pay-For-Performance)  
Minnesota  
    Buyers Health Care Action Group  
    Minnesota Hospital Quality Partnership  
New York State  
    New York State Health Accountability Foundation  
    New York State Hospital Quality Ratings  
    Adult Cardiac Surgery in New York State  
Robert Wood Johnson Foundation (Rewarding Results Demonstration Project)  
Wisconsin Collaborative for Healthcare Quality (WCHQ)  
Maine Health Management Coalition  
Puget Sound Health Alliance  
TalkingQuality.gov  
Wellmark's Collaboration on Quality® (summary by Blue Cross Blue Shield Association)

### **Section 5.1.5 – International**

This report is focused on measurement and programs in the United States. However, there are a few key international programs that are pursuing interesting and relevant directions in healthcare evaluation. 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 many aspects of the U.S. health care system are unique, international examples can provide useful insights into steps and processes that may inspire or inform.

The following organizations working internationally are summarized in the Inventory:

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

### **Section 5.2 – Hospital Quality**

Hospital quality measurement will be enhanced by healthcare reform legislation. There are increased federal reporting requirements, Hospital Value Based purchasing, Rural

hospital demonstration, and more focus on hospital/physician integration. There are also specific provisions on cancer and long-term care reporting.

In addition, the new overlap between hospital quality, affordability, and efficiency provide a potential framework for longer term trend management. Key elements such as re-admission improve both quality and efficiency. These initiatives are discussed in the CMS Section (5.1.2) of this report and the Inventory.

Currently, there is wider reporting of quality results for hospitals than physicians or other providers. This reporting exists in a variety of forums.

- Publications and web pages on quality that range from detailed government initiatives to rankings of hospitals available to the public. As mentioned previously, publication of hospital rankings can be controversial.
- Federal information on key illnesses is available on the Internet.
- Many states collect basic data on hospital discharges. Data bases that combine the results from each have been compiled and are available nationally. Often, in many states, results for key illnesses at each hospital are publicly available.
- Some states have developed greater in-depth studies on specific conditions that are relevant for those states.
- There is also an increasing focus on quality measures such as Hospital Acquired Infections, “Never Events”, and readmissions. 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>

Most of the hospital quality initiatives historically focused on inpatient care. However, standards on outpatient care are beginning to be developed. And, discussions on ACOs and payment reform have accelerated these initiatives.

Depending on the use of the data, extensive analysis is often needed. For example, credibility of the data must be reviewed even for large databases like those of CMS. Data allowing linkage of original admission and readmissions are not always readily available in 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.

There are many well-known and important organizations that measure hospital quality. Many of them were mentioned in Section 5.1. These include CMS, state programs and insurance carriers. This section highlights some additional organizations that have a particularly strong presence in hospital quality.

As mentioned in Section Four, there are multiple approaches to quality measurement. For example:

- The CMS HealthCompare 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.
- Other approaches start with basic reporting and then move to more sophisticated measurement over time. For example, the Leapfrog program 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. The Leapfrog group's original response was to ask hospitals to self-report implementation of CPOE and has since expanded their initiatives.
- The new federal payment rules for "Never Events" and Hospital Acquired Conditions have increased the energy around these topics.

The following organizations working on hospital quality are summarized in the Inventory. In addition, some organizations listed in Section 5.1 are also focused on hospital quality.

ASC Quality Collaboration  
Dartmouth Atlas Project  
HealthGrades  
HealthInsight  
Ingenix  
Joint Commission (JCAHO)  
Leapfrog Group  
Premier HealthCare  
Thomson Reuters Healthcare (formerly Solucient)  
U.S. News & World Report

### **Section 5.3 – Hospital Efficiency and Resource Use**

This section focuses primarily on measurement of efficiency related to inpatient admissions. Techniques to measure hospital outpatient or surgical services, such as analysis by episodes of care or by bundled surgical procedure, are more recent. Metrics for outpatient measurement are discussed briefly in Section 5.5.

Various CMS initiatives related to efficiency are included in PPACA. This includes measurement and reductions in readmissions and complications as well as payment reform to realign financial incentives. There has also been selective discussion of



various global payment approaches and how to assign outcomes to the hospital or provider.

Measurement of inpatient hospital results can be performed at a variety of levels. Basic population analysis evaluates key data, such as overall statistics length of stay, complication, or readmission rates. More complex analysis may review specific illnesses. Or, it can formally adjust for severity, complications, readmissions, and might include pre- and post-admission care. Allocations of cost and overhead also create complexity. Most major hospital studies analyze both quality and efficiency.

There have also been a significant number of useful reengineering studies within hospital departments and systems. Generally, an in-depth discussion of these approaches is outside the scope of this report. However, since the multi-year Virginia Mason re-engineering project started with an analysis of quality and efficiency analysis, this program is described as a Application example in Appendix F.

Many organizations measure hospital efficiency internally, although results are often not released externally. Given the wide range of policy and business goals for efficiency measurement mentioned earlier, few organizations have a particularly strong public presence in hospital efficiency measurement. Among them are:

- 3M, the creator of Diagnosis Related Groups (DRGs). DRGs have been used for many years by Medicare and a number of states as the basis for hospital reimbursements. 3M has continued to refine the DRG system and has created new DRG alternatives, including MS-DRGs and APR-DRGs, with additional severity and case mix adjustments for analysis and payment.
- Milliman has metrics including Care Guidelines and the Hospital Efficiency Index 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 Healthcare, which 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.

It is also important to evaluate the direct impact of efficiency on both resource use and revenue. The direct impact on buyers is affected by the payment structure. The impact on hospitals or physicians is more complicated because improved quality or efficiency may reduce revenue, given a reimbursement system built around production and service volumes. For example, in many states commercial insurers pay hospitals based on per diems (daily rates) or as a percentage of billed charges. This means that quality or efficiency improvements that reduce length of stay or billed charges may reduce hospital revenue and could discourage efficiency unless carefully managed.

Other elements in PPACA, such as ACO and bundled payment concepts provide the framework to make a significant difference in hospital financial incentives. Applications like this are outlined in Section Six.

The following organizations working on hospital efficiency are summarized in the Inventory. In addition, some organizations listed in Section 5.1 are also focused on hospital efficiency.

3M  
Dartmouth Atlas  
Ingenix  
Milliman  
Thompson Reuters (formerly Thompson Medstat)

## **Section 5.4 – Physician Quality**

PPACA again has a variety of provisions related to physicians, including changes to the existing physician reporting and feedback programs. However, measuring quality and efficiency of outpatient care is more difficult than measuring inpatient care. As a result, the physician provisions in the law anticipate that broader physician quality measurement, reporting, and accountability will be built over time.

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. Ensuring comparability between providers is also complicated. For example, an internist may treat many illnesses while a surgeon focuses on a particular specialty.

Therefore, measurement of physician quality continues to move at a different pace and direction from hospital quality. Some recent developments in physician quality are:

- Bridges to Excellence has begun national formal reviews of physician quality to recognize and incent physician performance
- Some medical 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. Initiatives such as this are beginning to improve the dissemination and implementation of evidence-based medicine.
- A number of states are publishing results for specific illnesses, treatments, and procedures, such as Cardiac Surgery.
- Several key organizations apply the clinical research and findings of medical specialty associations by collecting information on measurable physician quality. Results are automatically sent as reminders to physicians and/or

- patients about gaps in care.
- In states with highly organized physician groups, there is widespread reporting of specific results such as HEDIS. In some states, this has turned into a formal pay-for-performance program, for example, the multi-million dollar program run in California by IHA. This reporting and pay-for-performance has been expanded to PPO physicians in a few states.

The following organizations working on physician quality are summarized in the Inventory.

Active Health  
ACC  
AQA Alliance  
HCI3 - Bridges to Excellence  
Californian Association of Physician Groups  
Health Benchmarks Inc  
Health Dialog  
HealthGrades  
Ingenix  
National Cardiovascular Data Registry (NCDR) from American College of Cardiology  
Pacific Business Group on Health  
Patient Choice Healthcare Inc (Medica)  
RAND  
Physician Consortium for Performance Improvement (American Medical Association affiliate)  
Resolution Health  
Thompson Reuters (formerly Thompson Medstat)  
Zynx Health

## **Section 5.5 - Physician Efficiency and Resource Use**

The role of physicians in the healthcare delivery system is crucial. There have been major discussions around the support for primary care physicians, patient centered medical homes, payment reform, collaboration, and team-based medicine. Consequently, there are many investigations and pilots underway to support, measure, and reward physicians for their behavior. A few key examples of applications are outlined in Section Six.

Many of these concepts are also built into PPACA. The law allows the new CMS Innovation Center to expand and develop new approaches to physician support and payment reform over the years. In addition, various network and pay-for-performance applications have already started in the commercial sector.

The strong potential role of the physician and concept of physician accountability are widely discussed. In some cases, such as the proposals for the Patient Centered Primary Care Collaborative, there are proposals to change the reimbursement structure for physicians.

Given the growing importance of this topic, there are major initiatives to measure and endorse outpatient and physician efficiency measurement by the organizations listed in Section 5.1.1 (National Measure Developers and Endorsers). 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. There are a number of challenges including sample size, attribution to providers, specialist identification, risk adjustment, and responsibility of patients that need to be evaluated.

There have been some major developments in recent years:

- The core metrics for measuring episodes of care for efficiency measurement have been expanded and revised. This moves beyond inpatient costs to include all costs and procedures. Stronger risk adjustment and severity adjustment tools have been developed.
- CMS and Medicare have asked for a new approach to episode and physician measurement. This would reflect the complexity and comorbidities within a senior / disabled population.
- A portion of the physician community is using these techniques internally for prioritization or improvement projects.
- Faster technology allows sensitivity testing of core questions such as physician attribution.
- Physician metrics have been used to develop new alternative networks in parts of the country, for example, the Massachusetts GIC program or various carrier programs.
- The underlying tools are becoming more transparent. One major organization with episode measurement tools, Ingenix, provides a significant amount of detail about their episode measurement tools to people who register on their website.

It is now possible to use the same methodology to measure both efficiency - utilization with actual fees, and resource use - utilization with normalized fees.

In addition, there has been recent discussion and pilot projects around “payment reform.” The concept is similar to the hospital concept of changing the payment system to encourage appropriate care. It includes both bundled payments as well as payment rates that do not artificially reward preventable complications or invasive treatment.

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

The following organizations working on physician efficiency and resource use are summarized in the Inventory. 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  
Ingenix (ETG)  
Thomson Reuters (formerly Thomson Medstat; MEG)  
D2Hawkeye  
HCI3 - PROMETHEUS Payment System  
The Johns Hopkins University (ACG)  
Patient Centered Primary Care Collaborative  
Consumer Purchaser Disclosure Project

On a final note, surveys of patient experience are sometimes used as measures of quality. There are a number of these types of surveys, such as CAHPS. However, survey-based measures and self-reported results are outside the scope of this report.

## **Section 5.6 – Other**

There are other organizations with an important, visible presence in healthcare, but less involvement in formal measurement for specific hospitals or physicians, and hence, in some ways, outside the scope of this effort. These include:

- The National Institute of Health and National Library of Medicine.
- Organizations with a strong role in healthcare research or funding, producing formal reports and white papers.
- Organizations providing consumer information and general decision support tools.

Health Affairs has published a number of substantive articles and less formal commentaries on health reform, affordability, accountable care, payment reform, and other key concepts. These articles can be a strong source of information. Abstracts of articles are free, while the substantive peer-reviewed articles require a fee.

There are also key publications from organizations focused on health issues, particularly analyzing the impact of various healthcare reform proposals. These publications and organizations include the Commonwealth Fund, New England Journal on Medicine, as well as Kaiser Family Foundation, RAND, Dartmouth, and other organizations

mentioned earlier in the report. Many references to their relevant articles are included in the Inventory.

Many consulting firms, such as Deloitte, Ingenix, and Milliman, have developed white papers or provide periodic updates on payment reform, accountable care, and patient centered medical homes.

Finally, some references or articles come from organizations beyond these which are highlighted in this report. Appendix C provides links to these articles. This includes web links to pertinent Society of Actuaries reports and presentations on these topics.

The following additional organizations have a visible presence in healthcare and are summarized in the Inventory.

American Medical Group Association (CAPP project)  
Asparity Decision Solutions  
Avivia  
Brookings Institution - Engelberg Center for Health Reform  
Brookings-Dartmouth Learning Network  
The Commonwealth Fund  
The Hearst Corporation – Map of Medicine  
RAND  
Robert Wood Johnson Foundation  
Subimo  
WebMD Quality Care

## Section Six

### Applications (Payment Reform and Accountable Care)

This section outlines the major types of applications and discusses implications. Appendix F also includes a more in-depth discussion of five examples. Each example highlights a particular real-life application that is backed by extensive web sites and/or a commitment to open public disclosures.

Given rising health costs and quality challenges, it is crucial to move beyond measurement to action. There are many initiatives, pilots, and major applications either underway or being rapidly developed. Given the passage of PPACA, the scope of these initiatives can potentially include Medicare populations as well. This could make implementation by the provider community much easier.

#### Major concepts

Most of these initiatives and applications start from a few key concepts. Each key concept responds directly to one of the core structural problems with the healthcare system. Most are based around particular illnesses, but with new approaches or payment mechanisms. For example:

Accountable care responds to the fragmented delivery system.

Patient Centered Medical homes focus on improved patient and physician support.

Global payments or capitation address integration of services and the disconnect between many buyers (who pay per person) and service providers (who are not paid per person).

Most of 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.

In part, newer applications (such as Accountable Care Organizations) aim at a much more extensive role for providers than previous applications such as network and or pay-for-performance programs. However, all these applications start from a common premise. Physicians and hospitals should be encouraged to achieve high performance through financial rewards, increased membership, administrative support, and/or gainsharing back to the provider community.

The concepts and related applications below are still being defined and revised. Therefore, even if two programs are called by the same name, the underlying programs may be quite different.

**Accountable Care Organizations** – action within the fragmented and decentralized healthcare 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 developing this concept, developed a broad Learning Network, and created pilots across the country.

**Bundled payments** – the existing fee-for-service payment system creates misaligned incentives for hospital and physicians. For other major purchases, like a car or Lasik surgery, there is a single payment for the entire purchase. However, in healthcare, even for treatment such as a knee replacement or Coronary Artery Bypass Graft, each physician and organizations sends a separate bill. 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 payment incentives than fee-for-service payment structures. These are working in several key states, 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 non-financial targets. These capitation approaches can also work in concert with other applications discussed in this section.

**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. Global payments reflect the expected costs of covered services, usually estimated from past cost experience and an actuarial assessment of future risk related to patient demographics and known medical conditions.”<sup>15</sup>

From Recommendations of the Special Commission on the Health Care Payment System - Full Report - July 16, 2009

**Partial global payments** – a similar global payment approach can be applied to a major subset of payments. For example, a physician could be responsible for all

---

<sup>15</sup> Recommendations of the Special Commission on the Health Care Payment System - Full Report, July 16, 2009



physician services. Or a group of physicians could take responsibility for outpatient services (excluding outpatient pharmacy).

**Networks** – various alternative networks are available in some major states. Networks are often the foundation for Medicare Advantage programs. 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.

**Pay for performance** - there has been substantial growth in pay-for-performance programs across the country. These programs reward physicians for strong performance. Pay-for-performance programs vary significantly in size and financial commitment. There are formal ones which have been running for a number of 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.

**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.

Some key original programs worked to support the uninsured population with better data, primary care and pediatric physicians, and other patient support. But, these programs have been extended beyond these members as the concept appears to have promise in locations outside of the major urban population centers.

**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 admissions.

**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 both improves 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 applications are intended to reduce the trend in healthcare costs. This effort requires time and resources. And, 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.

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.

### Applications

Various applications are underway that utilize these concepts and improve quality and/or efficiency results in the local community. The applications are at many different stages of implementation ranging from:

- New startup or long-standing ongoing programs
- Minor expansion or substantive revision
- Limited local pilots or substantive statewide initiatives
- Proprietary programs or visible public initiative
- Payers connection (Medicare, Medicaid, employer, or insurance company)

Many applications involve a cooperative 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 the key local employers.

In the short term, various applications within each community often move at a different pace and direction. But, ultimately, these initiatives will be far stronger if the public sector and private sector initiatives are integrated within each community. The implication that an integrated approach might be adopted by Medicare and insurers nationally has energized the hospitals and physicians in some states.

There are many upsides to these new programs. However, many applications are still in the early phases of development. Consequently, much of the early focus is political or operational, rather than financial. Often, the measurement is just beginning. And, early indications are that financial agreements and gain-sharing provisions are complicated to negotiate and administer.

Website information from many applications is summarized in the Inventory (Appendix D).

## Examples - real-life applications – Appendix F

The applications discussed in this paper are extensive and might appear overwhelming. As a result, the authors thought a deeper discussion of a few examples might be helpful. Appendix F outlines the implications of a few programs. These examples were chosen for three reasons:

- Each program illustrated a core concept is potentially powerful.
- Many key elements have already been implemented.
- These particular programs have a strong commitment to publicly share information about their approaches – either directly in their web material or by cooperation with leading researchers and policy makers.

The following organizations are discussed in Appendix F.

Blue Cross Blue Shield of Michigan – Pay-for –performance incentives for hospitals and physician groups (within a Patient Centered Medical Home concept)

Geisinger Health System - "Warranty" for hospital system

Ingenix - Episode measurement and resource use

Prometheus - Payment Reform – prevent avoidable complications

Virginia Mason - Hospital resource measurement leads to reengineering

## Section Seven

### Summary - Implications and Future Potential Efforts

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

The following is a list of potential future efforts that the Society of Actuaries and other organizations may wish to undertake:

1. Efficiency - Nationally, there is continuing improvement in quality metrics. But, the discussion around efficiency and related metrics has been limited. This is a core expertise of actuaries. Actuaries could and should have a strong role in determining these metrics.
2. Payment reform - There are many approaches and concepts for provider measurement, payment reform, and accountability. Many of them overlap. An inventory and major analytical study of the implications of various payment reform options would be very powerful.
3. Attribution – Many new applications take responsibility for a subgroup rather than the full population. This impacts risk and selection – with a major impact on the stability of costs and other measures. Applications may be focused on Medicare, Medicaid, insured, or self-insured populations. Actuaries could quantify the implications of various attribution methods.
4. Networks - There are a number of alternative physician networks available to insured and self-insured populations. New metrics are being broadly used. It would be helpful to summarize the underlying metrics and analytic challenges underlying network development.
5. Early involvement - Given the goal of affordable care, it is important to understand the dollars and cost drivers. Actuarial or financial involvement in the early development of new program can help set priorities. The SOA could create a structure to support actuaries in the early stages in projects.
6. Policy collaboration - Given the major work that needs to be done, there should be opportunities for the SOA to collaborate with other major players.
7. Education - A major multi-year education campaign for actuaries is needed. Key elements of this are underway.

8. Local market impact - The Gawande article cited earlier talks directly about measurement and costs for Medicare in a local marketplace. Comparable articles could be written about programs offered to insured individuals and self-funded employers.
9. Existing approaches - Most of the major consulting firms are developing approaches to payment reform. The SOA could serve as a summary point for explaining capabilities to other audiences.
10. Efficiency / affordability connection - Efficiency and quality have a major impact on affordability. Given the major affordability issues facing all healthcare system stakeholders, a report that directly and explicitly connects these two topics would be useful.
11. Other topics - Several important related topics were excluded from this report, including systems (electronic medical records and disease registries), comparative effectiveness, reengineering, patient service, and perceived patient quality. Studies of these topics could provide additional background and information for financial experts.

In conclusion, future growth in this area appears unlimited. Factors that will influence this growth include:

- Easier access to a greater depth of data and information;
- Additional real-time information is rapidly becoming available. This includes Electronic Medical Records, Medical Homes, lab data, and other extensive clinical information; and
- Advanced techniques for predictive modeling, member engagement and decision support.

These new developments and healthcare 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. The authors hope that this report helps readers understand these resources and prepare for this changing healthcare landscape.

# Appendices

# Appendix A

## Definitions of Categories for Programs in Data Inventory

1. Accreditation, Certification - Products such as published standards based upon defined and agreed best-practices of an accrediting/certifying organization; or an organization undertaking the action of accreditation - an evaluative process in which a healthcare organization's policies, procedures and performance are self-reviewed and externally examined. The primary purpose is quality oversight with a view to establishing whether the healthcare 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, Healthcare Data Technology – Data technology vendor or data product that gathers, organizes/analyzes large amounts of information/data; either provides authoritative analytical information, assists clinical decision-making or the means by which an organization can generate/analyze information (such as episode-grouping tools); intended to assist an organization analyze its results/performance to improve healthcare quality and/or efficiency or to inform and align clinical decision-making with best-practice.
3. Incentives, Rewards Programs – Seek to align providers' financial incentives with quality goals; motivate and reward improved performance or reward exemplary performance on targeted dimensions of healthcare 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. This involves analysis/interpretation of performance measurement data into contextually useful information to drive quality and efficiency improvement. Use of qualitative and/or quantitative measures of care and services developed to gauge/interpret processes and outcomes. 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 provided in the form of a rating, report card/scorecard or measured against an industry benchmark.
5. Standards Setting, Industry Organizations - Organizations formed around specific purpose or subject matter; established for the purposes of developing standards and processes; or, to act on behalf of members promoting the interests of members. Focus is on common issues of interest such as in this context,

developing widely applicable standards/criteria of healthcare quality and/or efficiency; or, health sector analysis identifying areas of future research/action.

6. Summary for Public, Consumer, Infomediaries - Organization or product that seeks to promote transparency in the healthcare 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 healthcare organizations enabling the user to compare performance against that of peer organizations, against a range of user selected 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 – based upon well-tested, standardized measures that are widely accepted and used by a broad base of public and private entities.



## Appendix B

### Institute of Medicine (IOM) Definition of Quality

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.

# Appendix C

## Other Resources

This report focuses on organizations and products. There are other key articles which do not easily fit under a particular organization or product and are listed below.

As a primary example, there have been many recent publications and/or web exclusives in Health Affairs that relate to the topics of quality, efficiency, measurement, or performance. In January 2009, Health Affairs published a series of articles on improving performance and payment reform. In February, they produced overall health spending projections and spending by medical condition. Many other articles such as one discussing the implications of healthcare technology on performance and utilization have been published.

There are also articles on the websites of health consulting firms.

Some other key articles or reports include:

Innovations in Recognizing and Rewarding Quality March 2009  
America's Health Insurance Plans  
<http://www.ahip.org/content/default.aspx?docid=26393>

Linking Quality and Cost: An Analysis of the Hospital Research Projects.  
Research Projects in Health. Linking Quality and Cost: An Analysis of the Hospital  
Quality Information Initiatives Measures (CHM). Society of Actuaries  
<http://www.soa.org/research/research-projects/health/research-linking-quality-and-cost-an-analysis-of-the-hospital-quality-information-initiatives-measures-cmh.aspx>

Actuarial Role in Quality Improvement  
Sam Nussbaum, M.D; John P. Cookson, FSA, MAAA; John M. Stenson, FSA, MAAA  
Presentation in session 77 in 2008  
<http://soa.org/files/pdf/2008-la-cookson-77.pdf>

## Appendix D

### Inventory of Programs and Organizations

The complete 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. And, 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 Hospitalcompare web site. In other cases, state or local information is available from state governments, statewide associations, or from carriers for their members.

Hospital - Patient Experience and Select Clinical Quality data for Medicare

**<http://www.hospitalcompare.hhs.gov/>**

This appendix provides web links to a handful of measures that are widely used and provide information about specific individuals or organizations.

There are often more extensive resources available in specific states or communities. Many of these are listed in the report and Appendix D. Readers should check locally to see what detailed or supplementary information is available.

Hospital - National Leapfrog Survey

**<http://www.leapfroggroup.org/cp>**

Physician / carrier – HEDIS measures

**<http://www.ncqa.org/tabid/59/Default.aspx>**

Physician – Bridges to Excellence

**<http://www.bridgestoexcellence.org/Content/ContentDisplay.aspx?ContentID=19>**

One other key set of metrics is the Physician Quality Reporting Initiative (PQRI). However, this information is provided back to physicians, not the general public.

**<http://www.cms.gov/pqri/>**

## Appendix F

### Applications – Implications of a few examples

## Appendix F1 – Application #1

### Pay-for-performance (hospitals and physician groups) Blue Cross Blue Shield of Michigan

The following material is summarized from the web references from Blue Cross Blue Shield of Michigan.

#### Situation

Blue Cross Blue Shield of Michigan has developed a series of “Value Partnerships” among Michigan physicians and hospitals. The initiatives are improving clinical quality, decreasing complications, managing costs, eliminating errors and improving health outcomes.

There are three major initiatives:

- Physician Group Incentive Program
- Hospital P4P Program
- and Collaborative Quality Initiatives

#### Measurement

Measurement, comparative analysis, and national standards are a core element of all three initiatives.

**Physician Group Incentive Program (PGIP)** - Current initiatives focus on practice improvement, standardizing treatment and improving health outcomes, reviewing services with wide variation in practice patterns, and enhancing core clinical processes and the associated information technologies to build towards a patient-centered medical home.

**Hospital Pay-for-Performance (P4P) program** - rewards short-term acute care hospitals for achievement in quality, efficiency, and participation in Collaborative Quality Initiatives. Performance is compared against the performance of other hospitals in Michigan as well as national benchmarks.

The web material indicates significant reductions in costs for ambulatory care sensitive conditions, hospital readmissions, and selected referral rates.

**Collaborative Quality Initiatives (CQI)** - The Collaborative Quality Initiatives focus on common, costly procedures or treatments. Consortia of providers work together using comparative performance reports to identify processes associated with optimal outcomes. Current CQIs are working on bariatric surgery, cardiovascular, thoracic and cardiac surgery, breast oncology, peripheral vascular intervention, and cardiac imaging.

Collaborative Quality Initiatives report significantly lower hospital deaths, and improvement in many other measures such as unplanned coronary artery bypass surgery or gastrointestinal bleeding.

## Implications

The results of these programs illustrate the potential impact of combining a variety of elements:

Commitment to ongoing measurement, significant information sharing, and comparison to regional and national standards.

Collaboration between hospitals, physicians, and carriers on performance improvement.

The importance of financial incentives to focus attention, provide funding for behavior change, and rewards to participants.

## Publications

<http://www.bcbs.com/news/bluetvradio/pathway-to-covering-america/blue-cross-blue-shield-of.html>

[http://www.bcbsm.com/provider/value\\_partnerships/index.shtml](http://www.bcbsm.com/provider/value_partnerships/index.shtml)

<http://www.valuepartnerships.com/>

Blue Cross Blue Shield of Michigan 2010 Partners in Health Care Report

<http://www.bcbsm.com/pdf/partners.pdf>

2009 Hospital Pay-for-Performance Program. Overview

[http://www.bcbsm.com/pdf/HPP\\_pg14\\_program\\_description.pdf](http://www.bcbsm.com/pdf/HPP_pg14_program_description.pdf)

## Appendix F2 – Application #2

### Hospital System – "care warranty" Geisinger

This summarizes material from the Geisinger web site and a presentation to the National Health Policy Conference.

#### Situation

Geisinger is a physician-led health care system, dedicated to health care, education, research and service spanning 43 counties in Pennsylvania and serving 2.6 million people. Geisinger is an integrated delivery system with over 700 employed physicians, three acute care hospitals; specialty hospitals and ambulatory surgery campuses; and a 229,000-member health plan.

Geisinger has a variety of programs that began in 2005 and which makes them quite visible in healthcare reform. Major examples on the Geisinger website include their medical home and Proven Care Model 90-day 'care warranty'.

#### Measurement

There are a number of related elements within the Geisinger programs. Two key elements are discussed below:

The Proven Health Navigation program is an advanced medical home; wrapping a bundle of services around a patient, or a consumer, and his/her family. This runs the range of patient support, including healthy behaviors, disease prevention, and disease management once a patient has passed the point where prevention is no longer working.

Proven Care rationalizes the reimbursement paradigm for needed intervention once a patient becomes ill, and also engages the consumer more actively in his/her own self-care during the time of intervention.

Geisinger offers a 90-day 'care warranty' (for participating payers). This includes elective coronary artery bypass graft (CABG), elective percutaneous coronary intervention (PCI), total hip replacement, cataract surgery, and bariatric surgery. Components include clinical elements, such as evidence/consensus-based best practices, optimized work flows and explicit accountabilities. This program has packaged pricing and a performance-based "warranty". Geisinger sees an upside through efficient care including complications and readmission reduction.



For the entire program, there is an ongoing commitment to measurement, comparative effectiveness research, Healthcare Information Technology, personal health records and other modern approaches. The goal is to integrate these into daily practice.

### Implications

Geisinger has a very broad perspective on healthcare (as a hospital system, group of physicians, and insurance carrier). They have a strong commitment to measurement, payment reform, and open, public discussion of results and approaches.

The results they have reported in public presentations are show readmission rates reducing from 16.8% to 11.8%, major increases in performance on diabetics, and measurable improvements in CABG reliability.

As a result, they are very visible in the national health reform discussion.

### Publications

Continuous Innovation In Health Care: Implications Of The Geisinger Experience.  
Ronald A. Paulus, Karen Davis, and Glenn D. Steele, Health Affairs 27, no. 5 (2008):  
1235–1245

Pay for Performance, Version 2.0? Thomas H. Lee. NEJM 357;6 www.nejm.org august  
9, 2007  
[http://www.geisinger.org/provencare/nejm\\_pc.pdf](http://www.geisinger.org/provencare/nejm_pc.pdf)

ProvenCare: quality improvement model for designing highly reliable care in cardiac  
surgery. S A Berry, M C Doll, K E McKinley, A S Casale, A Bothe, Jr. Qual Saf Health  
Care 2009;18:360-368

“ProvenCare: A Provider-Driven Pay-for-Performance Program for Acute Episodic  
Cardiac Surgical Care,” A.S. Casale et al., Annals of Surgery 246, no. 4 (2007): 613–621.

Presentation at National Health Policy Conference  
<http://www.academyhealth.org/files/nhpc/2009/steele.pdf>

## Appendix F3 – Application #3

### Episode measurement and resource use Ingenix

#### Situation

Ingenix provides widely used tools to measure resource use and tie resource use to cost and efficiency. One key tool is their Episode Treatment Groups (ETGs) which focused on the total cost of care for particular illnesses. Another tool is their Procedure Episode Groups which measures surgical events.

Episodes are widely used by commercial insurers for evaluating their programs. In a few states, episode metrics are also used to create alternative networks that are offered to members at lower rates. These metrics are also used internally by hospitals and physician groups. However, this approach has not been used by federal programs given public policy implications and the high level of comorbidities for the Medicare population, outliers, data availability, and other challenges.

Last year, Ingenix decided to make many underlying details more transparent. Summaries of their programs are available on the web and additional details are available through free registration.

#### Measurement

The core episode concept takes claims for services provided during treatment of each patient, and organizes the relevant information into meaningful episodes of care. The goal is identification of homogeneous episodes of care that are useful to physicians and hospitals.

The latest Ingenix software platform, Symmetry 7.0, now directly presents risk factors that contribute to case mix and provides consistent severity scores. Their public material summarizes uses and challenges of these metrics (such as outliers, physician attribution, coding differences).

Episodes map patient care from a services perspective to illnesses. They help payers understand and compare episodes of care across patients, providers and populations. There are currently 542 supported disease conditions organized by type of illness.

#### Implications

Episodes organize massive claims data bases into smaller, more actionable categories. As a result, this process creates a structure for analysis and communication. This begins to bridge the gap between “macro” measurement of resource use and cost by buyers and the “micro” illness-specific treatment of patients by physicians or hospitals. Historic tools for cost measurement were at a “macro” level (the overall population had x visits and y lab tests). With episodes, the discussion moves from broad observations, “your patients had 40% more MRIs” to a more detailed drill-down for each patient. Resource use can be compared to other comparable physicians. As another example, a physician can see information for items such as prescriptions or hospital stays that were not previously available. ([http://www.ehcca.com/presentations/pfpsummit5/3\\_03\\_1.pdf](http://www.ehcca.com/presentations/pfpsummit5/3_03_1.pdf)).

This type of analytic tool is being used to provide an analytic foundation for a variety of Payment reform and accountability initiatives (including ACOs and PCMH). Payment reform offers the provider community the opportunity to take more responsibility for both quality and cost. Because this is dependent on solid data, concepts like episodes are being investigated and tested.

In addition, these tools can help evaluate overall market conditions. For example, a New Yorker article by Atul Gawande [http://www.newyorker.com/reporting/2009/06/01/090601fa\\_fact\\_gawande?currentPage=all](http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande?currentPage=all) discusses differences in utilization of services in McAllen, Texas. Episode metrics could be used to do a more in-depth analysis of the particular illnesses and providers.

### Key publications

Additional basic material is listed under the Ingenix entry in the Inventory. More extensive material is available for registered users at <http://www.ingenix.com/About/Transparency/Login/>

Continuing a history of innovation

Evolution of Symmetry: <http://www.ingenix.com/content/attachments/EvolutionofSymmetry.pdf>

Symmetry Episode Treatment Groups. Measuring Health Care with Meaningful Episodes of Care. White Paper [http://www.ingenix.com/content/File/IX\\_PYR\\_CL\\_19960\\_ETG\\_WP.pdf](http://www.ingenix.com/content/File/IX_PYR_CL_19960_ETG_WP.pdf)

Symmetry Episode Treatment Groups. Issues and Best Practices in Physician Episode Attribution. White Paper

[http://www.ingenix.com/content/attachments/Symmetry\\_EpisodeAttribution\\_WP\\_FINAL\\_112007.pdf](http://www.ingenix.com/content/attachments/Symmetry_EpisodeAttribution_WP_FINAL_112007.pdf)

Leveraging the Power of ETG 7.0: New opportunities for health care information analysis. White Paper.

[http://www.ingenix.com/content/attachments/IX\\_PYR\\_CL\\_23746\\_LeveragingSymmetry\\_WP.pdf](http://www.ingenix.com/content/attachments/IX_PYR_CL_23746_LeveragingSymmetry_WP.pdf)

### PEG Approach and Methodology

<http://www.ingenix.com/content/file/PEG%20Approach%20and%20Methodology.pdf>

Assessing Surgical Specialists with Value-Based Measurement

[http://www.ingenix.com/content/file/100-1778\\_PEG%20White%20Paper%202009-01-08\\_L03.pdf](http://www.ingenix.com/content/file/100-1778_PEG%20White%20Paper%202009-01-08_L03.pdf)

**Physician P4P Programs: Leveraging Data to Identify Opportunities for Cost and Quality Improvement**

[http://www.ehcca.com/presentations/pfpsummit5/3\\_03\\_1.pdf](http://www.ehcca.com/presentations/pfpsummit5/3_03_1.pdf)

## Appendix F4 – Application #4

### Payment Reform – preventing avoidable complications Prometheus

The following material is summarized from the public materials on the Prometheus website. Within the website there are additional extensive detailed examples of their data and approach.

#### Situation

PROMETHEUS Payment, Inc. is now part of the Health Care Incentives Improvement Institute TM, Inc. (HCI3™). This is a not-for-profit multi-stakeholder organization.

As discussed in this report, the uncoordinated healthcare system with the existing fee-for-service structure rewards providers when patients have quality problems or other complications. These patients use far more resources and funding than uncomplicated patients.

PROMETHEUS changes the financial incentives and aligns providers. Providers are offered offers direct incentives for a block of patients. They take collective responsibility to deliver better treatment value, improve outcomes, and reduce Potentially Avoidable Complications (PACs). The program creates improved margins for uncomplicated care funded by a reduction in serious, major complications.

#### Measurement

As excerpted from the website:

The PROMETHEUS model packages payment around a comprehensive episode of medical care called an Evidence-informed Case Rate, or ECR®. This is a budget for an entire care episode for a single specific illness. The ECR includes all covered services bundled across all providers (hospital, physicians, laboratory, pharmacy, etc.) ECRs are patient-specific and adjusted for severity and complexity of each patient's condition. An ECR also can include a margin to reflect an investment in business operations.

These ECRs have been developed for twenty major chronic or other serious illnesses.

A core concept of this program is to identify the “Technical Risk” that is within a provider's control, and therefore can be assumed by the provider. These technical risks include potentially avoidable complications (PACs) and other clinical problems. The

cost of PACs is significant (up to 40 percent of cost for chronic conditions - up to 20 percent for acute care).

These risks are built into the budget through a PAC allowance. The allowance is determined by running claims data through the PROMETHEUS Payment System to measure PAC rates. This rate is the current deficit. Typically, fifty percent of this deficit is added to the ECR as the PAC allowance. If PACs occur, the allowance is used to offset costs of corrective treatment. But if providers can reduce or eliminate PACs, the unused portion of the allowance is distributed among the providers as a bonus, as agreed upon by the implementers.

Various pilots to test and refine PROMETHEUS are under way around the country.

### Implication – payment reform

The core financial premise is straightforward – the health system can perform better with the right financial incentives and collaborative providers. PROMETHEUS attempts to directly address several major system wide challenges. Instead of very high payments only when the system fails, providers have responsibility for both uncomplicated and complicated care. This creates an incentive for collaborative providers to make clinically sound decisions to improve patient health.

Another potential strength of this concept is that the program can expand over time. The initial pilot can focus on one illness. Then, it can be expanded to other illnesses later on. This offers an intermediate step to build relationships between the provider community and buyers.

### Recent References

What's The Most Rational And Sustainable Pathway *To A New Health Care Payment System?*  
<http://www.bridgestoexcellence.org/librarydocument/content/10/Prometheus%20Brch-F6.pdf>  
PROMETHEUS Payment: What'sTheScore?1 *How Scores Determine Provider Payment*  
<http://www.bridgestoexcellence.org/librarydocument/content/36/Whats%20The%20Score.FINAL.pdf>

de Brantes, François., Meredith B. Rosenthal, , and Michael Painter, [Building a Bridge from Fragmentation to Accountability —The Prometheus Payment Model](#). NEJM 2009; 361:1033 (Perspective)

Rastogi A, Mohr BA, Williams JO, Soobader MJ, de Brantes F. [Prometheus Payment Model: Application to Hip and Knee Replacement Surgery](#). Clin Orthop Relat Res 2009; 467(10): 2587-2597.

An overview of Prometheus is available in Appendix D (Inventory) in this report. Substantial detail on the approach is also available on the Prometheus website after registration.

## Appendix F5 – Application #5

### Hospital - Resource measurement leads to reengineering Virginia Mason

The following material is summarized primarily from two references: a published Health Affairs article and a recent presentation by Virginia Mason. This supplements the web material from Virginia Mason which focused more on their recent reengineering approach.

#### Situation

Virginia Mason is an integrated delivery system in Seattle, Washington. In the mid-2000s, the organization was involved in a major project with employers and a major insurance carrier. The project measured the performance of various physicians and hospitals using key metrics discussed throughout this report. The goal was to create a new high-performance network. Initially, Virginia Mason was going to be excluded from the network. Instead, this project energized the system to conduct a thoughtful internal review and redesign their fundamental care processes.

#### Measurement

The original analysis indicated that the costs per episode of several medical subspecialty departments at Virginia Mason far exceeded benchmarks. After substantial discussion, management decided to start a process of continuous improvement that could be applied (1) to diverse performance measures of quality, time and resource efficiency; and (2) across different clinical (e.g., different patient populations) and operational (e.g., staffing versus inventory strategies) silos.

In interviews and in the first year's progress report, Aetna, Virginia Mason, and employer respondents asserted that the process changes resulted in reductions in total spending for each of the four conditions under study. However, the real-life project was not designed as a clinical study, so when reviewed using academic research principles, the results were less clear. There was no formal program evaluation, no pre- and post-intervention comparisons for Aetna patients only, data was proprietary, and results occurred across the entire system, not just the employers and carrier that was involved.

#### Implications - resource use and payment reform

An article about the first stage of the initiatives was published in Health Affairs in 2007. At that time, the article outlined business concerns about the implications of the redesign

on hospital margin. In a fee-for-service payment system, cost reduction from fewer services or changing their mix can also reduce profitability. This drop in profitability is caused because fewer services reduce revenue. Making the business case for sustaining desirable provider behavior may require that purchasers and plans make equally fundamental changes in payment policy. This remains a major challenge related to healthcare reform.

However, the ongoing results at Virginia Mason indicate that these challenges can be overcome. At the start of the project, there were business agreements to cushion the revenue declines. More importantly, the long term impact as these programs have been extended has been positive. Even though the average length of stay has declined, the overall margin has actually increased.

### Primary References

Redesigning Care Delivery In Response To A High-Performance Network: The Virginia Mason Medical Center by Hoangmai H. Pham, Paul B. Ginsburg, Kelly McKenzie, and Arnold Milstein. Health Affairs Web Exclusive. 10 July 2007  
<http://content.healthaffairs.org/cgi/content/abstract/hlthaff.26.4.w532>

2010 Integrated Healthcare Association Pay for Performance Conference  
[http://www.ehcca.com/presentations/pfpsummit5/kaplan\\_2.pdf](http://www.ehcca.com/presentations/pfpsummit5/kaplan_2.pdf)  
(Slides 31 and 32 from the conference presentation)

### Other references (discussed in Appendix D)

The Virginia Mason Production System  
[https://www.virginiamason.org/home/workfiles/clinicians/Winter\\_Contact\\_2008.pdf](https://www.virginiamason.org/home/workfiles/clinicians/Winter_Contact_2008.pdf)

2010 VMPS Facts  
[https://www.virginiamason.org/home/workfiles/pdfdocs/press/vmps\\_fastfacts.pdf](https://www.virginiamason.org/home/workfiles/pdfdocs/press/vmps_fastfacts.pdf)

'Reducing Waste in US Health Care Systems.' Roger W. Bush, JAMA, February 28, 2007—Vol 297, No. 8  
871-874

Virginia Mason Medical Center. Harvard Business Review Case Study, 2006.  
[https://www.virginiamason.org/home/workfiles/VMI/HarvardBusinessSchool\\_VMPS.pdf](https://www.virginiamason.org/home/workfiles/VMI/HarvardBusinessSchool_VMPS.pdf)