INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

CORE METRICS FOR BETTER CARE, LOWER COSTS, AND BETTER OUTCOMES

An Institute of Medicine Workshop sponsored by the Blue Shield of California Foundation

December 5-6, 2012
Beckman Center, The National Academies
100 Academy Way
Irvine, CA 92617

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

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Workshop Framing Materials

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A LEARNING HEALTH SYSTEM ACTIVITY
IOM ROUNDTABLE ON VALUE & SCIENCE-DRIVEN HEALTH CARE

DECEMBER 5-6, 2012
THE BECKMAN CENTER OF THE NATIONAL ACADEMIES
100 ACADEMY WAY
IRVINE, CA 92617

Meeting goals

1. Discuss the vision for the nature, use, and impact of core health metrics.
2. Identify the important principles, targets, infrastructure, processes, strategies, and policies.
3. Describe lessons from efforts at national, state, community, and organization levels.
4. Specify core needs and requirements, and propose priority metric categories that will most reliably measure care outcomes, care costs, and health improvement.
5. Consider specific examples of metric options within categories.
6. Describe the implementation strategies—national, state, community, organizational.

Wednesday, December 5th

8:00 am Coffee and light breakfast available

8:30 am **Welcome, Introductions, and Overview**

Welcome from the IOM
Michael McGinnis, Institute of Medicine

Welcoming remarks
Peter Long, Blue Shield of California Foundation

Opening remarks and meeting overview
Craig Jones, Vermont Blueprint for Health (Planning Committee Chair)

9:00 am **Core metrics and health progress: vision, principles, uses, requirements**

Discuss the purpose of core metrics, review examples of their usefulness, consider their development and use at national, state, community, organizational, and individual levels, and preview some of development and implementation challenges.

Vision and importance of measuring the three-part aim
Maureen Bisognano, Institute for Healthcare Improvement

Vision for a systems approach to achieve the three-part aim
George Isham, HealthPartners

Q&A and Open Discussion

Session Chair: *Craig Jones*, Vermont Blueprint for Health

10:15 am **Break**

10:30 am **Current state of measurement**

Discuss the inventory of current primary efforts, their relationship to each other, the categories of issues they cover, and the key discrepancies between the measurement vision and the current state of assessment on the three dimensions at the various levels. Illustrate issues with case studies.

The role of measurement in the National Quality Strategy
Carolyn Clancy, Agency for Healthcare Research and Quality

Key challenges and opportunities for current measurement capabilities
Helen Burstin, National Quality Forum

Consistent and timely measure implementation
Barbara Gage, The Brookings Institution

Q&A and Open Discussion

Session Chair: *Ed Sondik*, Centers for Disease Control and Prevention

12:00 pm **Lunch**

12:30 pm **Priority requirements and needs in measuring health, care, and cost**

Consider the principles for choosing the core metrics—priorities for improving care, lowering costs, improving health; regulatory and program requirements; available capacity.

Accountable care and measuring the three-part aim
Eugene Nelson, The Dartmouth Institute for Health Policy and Clinical Practice

Measuring the quadruple aim: The Military Health System experience
Michael Dinneen, Department of Defense

Case studies of current initiatives for measuring the three-part aim
Craig Jones, Vermont Blueprint for Health

Q&A and Open Discussion

Session Chair: *Anne Weiss*, Robert Wood Johnson Foundation

2:00 pm **Breakout groups: proposed options for measuring health, care, and cost**

Identify potential sets of core metrics to track progress toward better care, better health, and lower costs at national, state, community, organizational, and individual levels. Outline the primary challenges, opportunities, and measurement needs.

Health
Leader: *Patrick Remington*, University of Wisconsin
Opening Context: *Steven Teutsch*, Los Angeles County Department of Public Health

Health care
Leader: *David Stevens*, National Association of Community Health Centers
Opening Context: *Mary Barton,* National Committee for Quality Assurance

Cost
Leader: *Kate Goodrich*, Centers for Medicare & Medicaid Services
Opening Context: *Dennis Scanlon*, Pennsylvania State University

4:00 pm **Report back from breakout groups**

5:00 pm **Wrap up of the day's discussions**

Summarize common themes heard in Day 1.

5:30 pm Recess to Reception

Thursday, December 6th

8:00 am Coffee and light breakfast available

8:30 am **Summary of Day 1**

9:00 am **Getting there from here: Panel discussion on implementation**

Examine strategies for successfully advancing measurement of the Three-part Aim using case studies of individual initiatives.

Analyzing health status in all counties
Patrick Remington, University of Wisconsin

General themes for implementation
Matt Stiefel, Kaiser Permanente

Implementing state-wide measures on access, cost, quality
Stefan Gildemeister, Minnesota Department of Health

Measurement framework for coordinated care in Medicaid
Carole Romm, Oregon Health Authority

Q&A and Open Discussion

Session Chair: *Diana Dooley*, California Health and Human Services

10:15 am	**Break**

10:30 am	**Requirements for building the infrastructure**

Explore the common themes around the data, technical, and social infrastructure necessary to advance measurement. This will especially consider the challenges and opportunities for making measurement a routine component of the health care and health systems.

Data infrastructure needs for measurement
Kevin Larsen, Office of the National Coordinator for HIT

Case examples of building the infrastructure
Chris Queram, Wisconsin Collaborative for Healthcare Quality

Building the data infrastructure in a health care environment
Bruce Ferguson, East Carolina University

Q&A and Open Discussion

Session Chair: *David Stevens*, National Association of Community Health Centers

12:00 pm	**Moving forward: Policy options and practical strategies**

The workshop will conclude with a session that summarizes the discussions and outlines the path for moving these metrics into practice.

Comments from the Chair
Craig Jones, Vermont Blueprint for Health

Comments and thanks from the IOM
Michael McGinnis, Institute of Medicine

1:00 pm **Adjourn**

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Michael E. Chernew	Harvard Medical School
Diana S. Dooley	California Health and Human Services
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Marjorie Ginsburg	Center for Healthcare Decisions
Kate Goodrich	Centers for Medicare & Medicaid Services
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Workshop Background Paper

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STAFF BACKGROUND PAPER
ROBERT SAUNDERS, IOM

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Health reform initiatives are taking hold in all regions of the United States. In conjunction with this, there is an emerging need for the use of core measures to guide progress towards a continuously Learning Health System that can help to advance along three dimensions: improved care experience and quality, better population health, at lower costs. To stimulate progress in measurement, this workshop will explore the vision for the use of core metrics, the current state of affairs and needs for use of core metrics, principles and categories for core metrics, and examples of core metrics within categories that can help to achieve the vision.

As measurement requires many support structures, the workshop will further explore the infrastructure, resources, and policies that are needed for the use of core metrics across independent organizations and providers. These measurement needs will vary across the measurement levels, ranging from individual patient care to the assessment of populations, with different strategies required at each level. In addition, this workshop will consider measurement issues across the health care system, including care providers, health care delivery organizations, payers, patients, specialty societies, and others, as well as the broader health system, which includes the health care system, public health, community-based organizations, and other organizations and individuals who seek to improve health.

Potential benefits of core metrics: comparisons, collaborations, reduced measurement burden

There are several reasons for identifying a core set of measures that can track progress. First, common core measures provide for routine comparisons between different programs in order to identify easily effective programs, allowing for best practices to be shared, resources to be allocated toward promising initiatives, and programs to continuously improve their performance. Second, progress toward the three-part aim often requires diverse coalitions to address the myriad factors influencing health and health care. Because of this, core measures are critical to allow initiatives to work with fundamentally different systems—from county-based health departments, health care deliver organizations, to employers. Third, a common core set of measures can help to reduce the measurement burden from the current proliferation of metrics, as the number of metrics that individuals and organizations now have to produce has increased steadily over time.

A changing national landscape

A number of broad-based reform initiatives are emerging throughout the country that can assist in the creation of a Learning Health System, ranging from expanding the use of evidence in care, engaging patients in their health and health care, encouraging team-based care, developing innovative health care payment strategies, and preventing the incidence of chronic disease through community-based efforts. Routine assessment of common measures of progress, across populations and settings, is inherent to the success of these transformative programs.

Role of enhanced data infrastructure in improving measurement

A prerequisite to assessment is the ability to routinely capture the key data elements that populate core measures along with the ability to exchange those data elements across data systems. Although progress is being made, there is a significant gap between the current reality and the necessary data support. For example, *despite an investment of significant resources, there is a patchwork of independent electronic health record systems that do not capture the necessary key data elements in consistent formats and do not readily exchange those elements across systems.* The country faces the possibility of a disjointed digital infrastructure that will not meet the needs of individuals or organizations, nor establish the capacity for regular assessment across the full landscape of organizations and individuals involved in the health and health care systems.

Technological progress can improve measurement capabilities. Emerging new devices can continually measure specific aspects of an individual's physical state, which can allow a more complete picture of their health status and the impact of various interventions. The expected flood of new data from these personal devices will have implications on what is measurable and the actionability of different measures. Yet, new challenges will also occur—from the interoperability of different devices, to the capabilities to analyze and use this new data, to the privacy and security of the generated data. As well, any measurement initiative must consider how measures will be updated and implemented based on the technological progress that is sure to occur.

Using metrics to guide the development of the data infrastructure

Metrics and data are interconnected. While a strong data infrastructure is necessary for progress with core measures, core metrics can also guide the creation of a robust, rational digital infrastructure. A core set of measures can be used to identify the necessary data elements that a data system should capture as part of routine operations. In the example of electronic health records and health information exchanges, a core set of meaningful metrics could serve as the basis for a data dictionary with electronic record system designed to export and ingest these key elements, to populate the measures using this data in a dynamic fashion, and to assure transmission and exchange of key data elements through health information exchanges. Similar principles apply to other data systems, from multi-payer claims databases to health surveillance systems.

Abbreviated history of core measurement efforts

There has been extensive prior work on identifying the core measurement needs in different health and health care domains. One of the oldest efforts is the National Committee on Vital and Health Statistics, founded by the Congress in 1949 to identify the information needs for health policy. Another long-standing enterprise is the Healthy People initiative, which started in 1979 with the publication of *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. This initiative has continued to the present day with four follow-on publications, the most recent being *Healthy People 2020.* In addition, the Institute of Medicine has produced several reports examining various areas of measurement, from *Performance Measurement* (2006) to *For the Public's Health: The Role of Measurement in Action and Accountability* (2010). Where possible, this document has drawn upon these prior efforts.

Tailoring metrics to their ultimate use

Metrics do not exist in a vacuum but depend on their ultimate use. For example, a metric that aids an organization in quality improvement efforts may not be appropriate when tied to payment for health care services. This fact adds additional complexities to metric development and selection, as there are many ways that metrics are used today, including:

- Quality improvement (e.g. organizational, regional, state, national levels)
- Payment and purchasing decisions (e.g. pay for performance, tiered networks, state exchanges)
- Reporting and transparency (e.g. internal, clinical practice feedback, rankings, public, exchanges, surveillance)
- Regulation (e.g., professional certification, facility accreditation)
- Funding (e.g. organizational and governmental budgets, philanthropy)
- Scientific and clinical research (e.g. effectiveness research)

Tailoring metrics based on the user, target audience, and the level of the health system

Each stakeholder group brings differing perspectives on the various aspects of the three-part aim. Those perspectives will vary further depending on the level of the health system at which measurement occurs. For instance, the concept of cost depends heavily on who is measuring it—the patient may consider out-of-pocket costs, a payer may consider total claims, and the federal government may view budgets and appropriations for health programs. In addition to the multiple perspectives from diverse stakeholders, a metric's suitability for use by a particular stakeholder group will depend upon their access to data sources, their areas in need of improvement, and their potential capabilities to affect a particular metric. Furthermore, effective communications strategies of these metrics must account for the target audience's circumstances and needs, their numeracy and health literacy, and their perceptions of the metric. Communicating metrics to many stakeholder audiences requires multiple dissemination methods, which may include rankings, media reports, academic publications, publicly reported data, and other techniques. The variety of perspectives and needs are reflected in the number of stakeholders, which includes the following:

- Patient, Consumer, and Individual
- Front-Line clinical provider
- Hospital/Organization
- Payer
- Public health
- Regulator
- Communication professionals (media, journals, trade publications)
- Regional
- State (legislators, governors, executive agencies)

- Federal (legislators, executive agencies)

Data sources to support measurement

There are a variety of data sources that could be leveraged to support measurement. These data sources vary based on the population of individuals included, the purpose for the data, and the process for collecting the data. These variations affect whether the data source is useful for different measurement uses. The current primary data sources for metrics include:

- Patient level clinical care data (e.g. electronic health records, registries)
- Individual level social data (e.g. social & economic status; demographics; access to social & economic services, children & family services, elderly services, and home health services)
- Population level clinical data (e.g. cancer, chronic condition & screening registries)
- Population level safety data (e.g. adverse event reporting registries)
- Vital statistics (e.g. local, state, & national vital statistics registries)
- Claims data (e.g. Medicare claims database, private payer claims database, multi-payer claims databases)
- Patient surveys (e.g. experience, health status)
- Population surveys (e.g. U.S. Census surveys)

Example characteristics to meet a vision for assessing the three-part aim[1]

Given the importance of accurately assessing progress toward the three-part aim of improved care quality, lower costs, and better population health, the metrics used for this purpose must have several key characteristics. Potential characteristics include:

- *Based on evidence*: The metric has an explicit evidence base proving its reliability (consistent results for similar populations and settings) and validity (its results reflect what it intends to measure).
- *Minimal measurement burden*: The metric can be calculated from data collected by routine care and health monitoring, uses common technical specifications for measure calculation, and does not pose an undue burden in cost, time, or effort.
- *Important*: The metric should have an impact on health, care, or cost and should be tied to overarching goals for the health or health care system, such as reducing disparities.
- *Actionable*: The metric can be influenced by the actions, policies, or incentives implemented by individuals or organizations in the health or health care system.
- *Comparable*: The assessment should include benchmark or comparison data, such as over time, between geographical regions or communities, or between organizations.
- *Aligned*: When possible, measures should be aligned to reduce redundancy, focus attention on common goals and needs, and use existing measures when possible.
- *Comprehensive*: Measures should be as comprehensive as possible, bundling individual metrics to describe meaningful concepts in health, care, or cost.
- *Useful at multiple levels*: As much as possible, the metric should be useful at multiple levels: individual, organizational, regional, state, and federal.

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[1] These characteristics build on those from previous efforts, such as the IOM's *Performance Measurement* (IOM, 2006).

Gaps in current measurement capabilities [2]

While measurement of the three-part aim has improved over time, there are multiple gaps that continue to exist. These include:

- *Lack of routine measurement data* due to missing data elements in electronic health records, lack of interoperability, and limited identify management.
- *Limited scope* with few capabilities to measure patient-centered care, equity, or efficiency; for children or those at the end of life; and other important conditions.
- *Lack of longitudinal measures* with most measures focusing on a narrow time window or single point in time and not assessing care across settings.
- *Provider-centric focus* centered on existing silos of the health care system.
- *Narrow focus of accountability* with most measures concentrating on an individual provider's actions versus broader levels of accountability.
- *Limited composite measures* such as those that measure the treatment for an entire disease.
- *Need for actionable measures* that can guide improvement and policy initiatives at different measurement levels.
- *Concerns over technical accuracy* such as incomplete risk adjustment, limited sample size, inaccurate or missing data accuracy, and potential for gaming.

Additional considerations for measure development, section, and use

Beyond the specific issues outlined above, several other topics are important to consider in developing, selecting, and using measures. Some of these include:

- The limited number of measures applied to rare diseases and special populations, such as pediatrics.
- Assessing how accurately metrics capture the process or outcome they seek to assess.
- Ensuring measurement can be conducted by all individuals and organizations in the health and health care system, such as safety net providers.
- How to involve patients as a driving force in improving measurement.
- Incorporating new technologies, such as mobile devices, and technological improvements in data sharing, data processing, and distributed registries.
- Ensuring metrics are forward looking and continuously learn and improve.
- How to roll up metrics to larger levels of aggregation, with the ability to operationalize at lower levels while having a dashboard for tracking progress at higher levels.
- Tension between starting with the metrics and data currently available and improving over time, versus seeking to improve metric and data quality before widespread deployment of measurement approaches.
- The role of organizational and social factors necessary for implementing measurement strategies, including leadership, culture (such as teamwork, partnerships, transparency), the business case or return on investment, knowledge management infrastructure, and workforce competencies.
- Understanding how metrics vary between different segments of the population, and where disparities in health, care quality, or costs exist.

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[2] These gaps build on those from previous efforts, such as the IOM's *Performance Measurement* (IOM, 2006).

MATRIX OF POTENTIAL METRIC CATEGORIES ACROSS THE THREE-PART AIM

Metric Domain	**Metric Categories**	**Example Metrics**	**National Priority from National Quality Strategy**
Population Health	Length of life	Mortality, life expectancy, premature birth, preventable deaths	Promote wide use of best practices to enable healthy living and well-being. (National Priority 1)
	Quality of life	Physical health, functional status, disease burden, morbidity, pain, mental health, social functioning, injuries	
	Health behaviors and risk	Smoking, exercise, alcohol use, healthy diet, obesity	
	Utilization of preventive Services	Immunizations, dental health, appropriate screening	
	Community health	Safety, healthy food, walkability / places to exercise, pollutants, healthy workplaces	
	Social and economic factors	Educational attainment, literacy, poverty, unemployment, health insurance status	
Health Care	Effective	Adherence to guidelines, disease-specific treatment targets (e.g., cardiovascular disease: control of high blood pressure, cholesterol, aspirin use)	Promote the most effective prevention, treatment, and intervention practices for the leading causes of mortality, starting with cardiovascular disease. (National Priority 2)
	Patient-Centered	Experience of care; shared decision-making, shared goal-setting, or patient inclusion in health care team, patient knowledge and understanding of care plan, clinical communications, supports for self-care	Ensure person- and family-centered care (National Priority 3)
	Safe	Preventable hospital admissions / readmissions, health care associated infections, medical errors (composite measure: serious reportable events), inappropriate medication use, inappropriate maternity / newborn care, unnecessary tests, occupational safety in health care	Make care safer (National Priority 4)

	Coordination and communication	Experience of care transitions, communication among health care team members--including patient, family, and caregivers, appropriate sharing of health records, care consistent with preferences--particularly for end of life care,	Promote effective communication and care coordination (National Priority 5)
	Equitable	Support of vulnerable populations, communication appropriate to individual and community health literacy	Elements captured in National Priorities 1, 3 and 5
	Efficiency and timeliness (includes operations)	Access to needed care, consistent insurance, achievement of meaningful use of health IT, appropriate nurse staffing, effective management	Elements captured in National Priorities 5 and 6
Cost	Affordability	Costs for households / individuals, impact on wages / benefits, impact on other government services (local, state, national)	Make quality care affordable for people, families, employers, and governments (National Priority 6)
	Expenditures	Overall annual spending on health care (per member per month, per capita, episode, service), utilization of services	
	Indirect costs	Absenteeism, productivity	
	Waste	Unnecessary services (includes costs due to unwarranted variation / overuse), fraud, excessive administrative costs, inefficiently delivered services, prices that are too high, missed prevention	

EXAMPLE METRIC STEWARDS, DEVELOPERS, AND USERS

Population Health

- CDC (e.g. Community Health Status Indicators; National Center for Health Statistics; Office of Surveillance, Epidemiology, and Laboratory Services)
- County Health Rankings (with the University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation)
- HHS (e.g. Healthy People 2020—Leading Health Indicators)
- NIH
- NQF
- Private insurers and health plans
- State of the USA Health Indicators
- UnitedHealth Foundation (e.g. America's Health Rankings)

Health Care

- AHA (e.g. Committee on Performance Improvement)
- AHRQ (e.g. National Healthcare Quality Report, National Healthcare Disparities Report, National Quality Measures Clearinghouse, CAHPS)
- AMA (e.g. convening the Physician Consortium for Performance Improvement)
- AQA Alliance
- CDC
- CMS (e.g. Hospital Compare. Physician Compare, Physician Quality Reporting System)
- HRSA
- Institute for Clinical Systems Improvement
- Joint Commission (e.g. ORYX)
- Leapfrog Group (e.g. Hospital Safety Score)
- NCQA (e.g. HEDIS measures)
- NIH (e.g. Patient Reported Outcomes Measurement Information System [PROMIS])
- NQF
- OSHA (e.g. health worker safety, injuries)
- Private insurers and health plans
- Quality Alliance Steering Committee
- Specialty societies and professional societies (e.g. National Surgical Quality Improvement Program, registries)
- Utilization Review Accreditation Committee
- Veterans Health Administration (e.g. ASPIRE, Surgical Care Improvement Project, Linking Information Knowledge and Systems)

Cost

- AHA
- AHRQ (e.g. Healthcare Cost and Utilization Project)

- Census Bureau (e.g. National Health Interview Survey [collaboration with CDC], Medical Expenditure Panel Survey [collaboration with CDC and AHRQ])
- CDC
- CMS (e.g. National Health Expenditures)
- NQF
- Private insurers and health plans
- Quality Alliance Steering Committee (e.g. High-Value Health Care Project)

APPENDIX A: SAMPLE REFERENCE POINTS FOR MEASUREMENT VISION

Multiple organizations have developed criteria for judging the quality of measurement efforts and individual metrics. This appendix highlights several of those efforts to provide additional background when considering the vision for assessing the three-part aim.

Performance Measurement: Accelerating Improvement (IOM, 2006)

In this 2006 report, the IOM committee outlined a set of principles for a national system for performance measurement and reporting. The goal of this report was to outline measures that could support quality improvement activities undertaken by a broad range of stakeholders and propose a common infrastructure that could guide and manage a consistent set of measures on a national and regional level.

1. *Comprehensive Measurement.* A performance measurement system should advance the core purpose of the health care system and foster improvements in all six quality aims identified in the Quality Chasm report: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity.
2. *Evidence-Based Goals and Measures.* A performance measurement system should be guided by a comprehensive set of evidence-based goals for improvement.
3. *Longitudinal Measurement.* Standardized performance measures should characterize health and health care both within and across settings and over time.
4. *Supportive of Multiple Uses and Stakeholders.* A performance measurement system should provide information for multiple uses, including provider-led improvement efforts, public reporting, payment and benefit design, and population health initiatives.
5. *Measurement Intrinsic to Care.* Performance measurement should be intrinsic to the care process.
6. *A Central Role for the Patient's Voice.* A performance measurement system should include direct reports and ratings from patients and family caregivers.
7. *Patient-Level, Population-Based, and Systems-Level Measurement.* Measurement and measures should assess the health and health care of both individuals and populations and the many systems within which care is provided.
8. *Shared Accountability.* Measurement should not be constrained by the absence of a current, identifiable, single responsible agent.
9. *A Learning System.* A performance measurement system should be a learning system, continually evaluating its own performance and advancing knowledge regarding performance measurement.
10. *Independent and Sustainable.* A performance measurement system should be continually enhanced and financed in a way that ensures its independence and sustainability.

Ten Criteria for Meaningful and Usable Measures of Performance (Consumer-Purchaser Disclosure Project, 2011)

The Consumer-Purchaser Disclosure Project, a Robert Wood Johnson Foundation funded initiative, outlined 10 criteria for measures, with a focus on consumer and purchaser needs. The 10 suggested criteria were spread across the three-part aim of health, care, and cost.

1. Make consumer and purchaser needs a priority in performance measurement.
2. Use direct feedback from patients and their families to measure performance.

3. Build a comprehensive “dashboard” of measures that provides a complete picture of the care patients receive.
4. Focus measurement on areas of care where the potential to improve health outcomes and increase the effectiveness and efficiency of care is greatest.
5. Ensure that measures generate the most valuable information possible.
6. Require that all patients fitting appropriate clinical criteria be included in the measure population.
7. Assess whether treatment recommendations are followed.
8. De-emphasize documentation (check-the-box) measures.
9. Measure the performance of providers at all levels (e.g., individual physicians, medical groups, ACOs).
10. Collect performance measurement data efficiently.

Measure Applications Partnership Measure Selection Criteria (MAP, 2012)

The Measure Application Partnership (MAP) outlines eight criteria areas that are used when assessing potential measures for payment and public reporting purposes.

1. Measures meet requirements for NQF endorsement: important to measure and report, scientifically acceptable measure properties, usable, and feasible
2. Adequately addresses the National Quality Strategy priorities:
    a. safer care
    b. care coordination
    c. preventing and treating leading causes of mortality and morbidity
    d. person and family-centered care
    e. supporting better health in communities
    f. making care more affordable
3. Addresses high-impact conditions for the intended population
4. Promotes alignment to the measure program’s attributes and across measurement programs.
5. Includes appropriate mix of measure types (outcome, process, experience, cost, structure)
6. Enables measurement across the person-centered episode of care
7. Includes consideration for health care disparities
8. Promotes parsimony

Characteristics of a Continuously Learning Health Care System (IOM, 2012)

Science and Informatics

Real-time access to knowledge—A learning health care system continuously and reliably captures, curates, and delivers the best available evidence to guide, support, tailor, and improve clinical decision making and care safety and quality.

Digital capture of the care experience—A learning health care system captures the care experience on digital platforms for real-time generation and application of knowledge for care improvement.

Patient-Clinician Partnerships

Engaged, empowered patients—A learning health care system is anchored on patient needs and perspectives and promotes the inclusion of patients, families, and other caregivers as vital members of the continuously learning care team.

Incentives

Incentives aligned for value—In a learning health care system, incentives are actively aligned to encourage continuous improvement, identify and reduce waste, and reward high-value care.

Full transparency—A learning health care system systematically monitors the safety, quality, processes, prices, costs, and outcomes of care, and makes information available for care improvement and informed choices and decision making by clinicians, patients and their families.

Culture

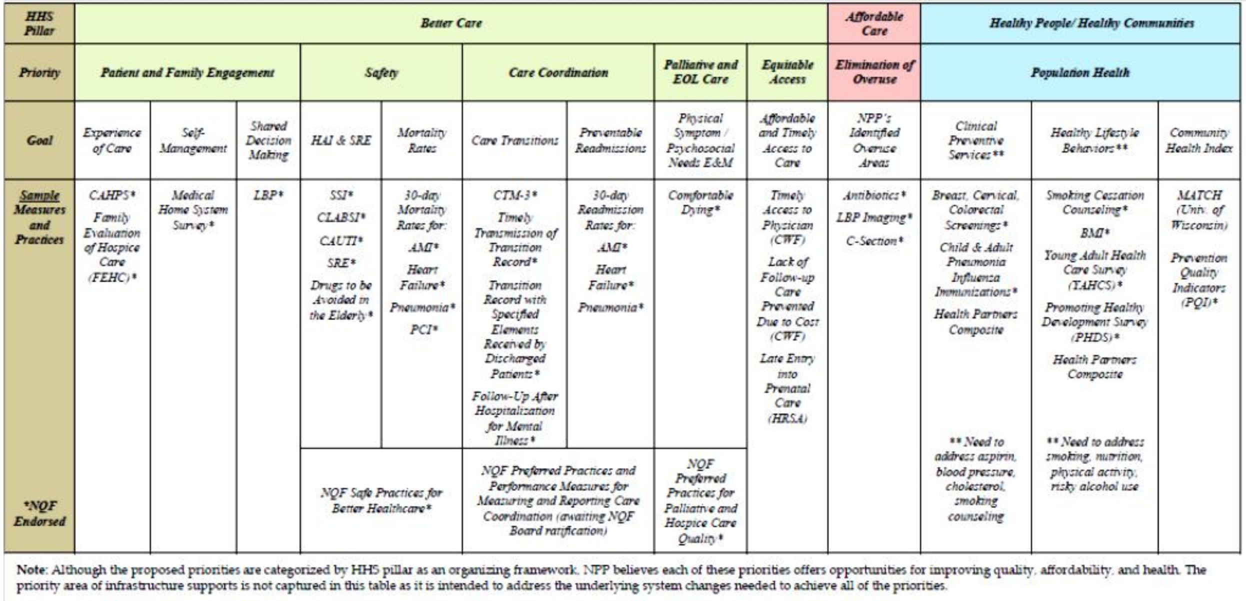
Leadership-instilled culture of learning—A learning health care system is stewarded by leadership committed to a culture of teamwork, collaboration, and adaptability in support of continuous learning as a core aim.

Supportive system competencies—In a learning health care system, complex care operations and processes are constantly refined through ongoing team training and skill building, systems analysis and information development, and creation of the feedback loops for continuous learning and system improvement.

APPENDIX B: TOUCHPOINTS ON CORE METRICS CANDIDATES

Multiple organizations have outlined the core metrics needed to assess all parts of the three-part aim. This appendix outlines several of those proposals for background when considering the categories and example measures needed to assess health, care, and costs.

National Priorities Partnership:
HHS Pillars and NPP's Proposed Priorities, Goals and Sample Measures



HHS Pillar	**Better Care**									**Affordable Care**	**Healthy People/ Healthy Communities**		
Priority	**Patient and Family Engagement**			**Safety**		**Care Coordination**		**Palliative and EOL Care**	**Equitable Access**	**Elimination of Overuse**	**Population Health**		
Goal	*Experience of Care*	*Self-Management*	*Shared Decision Making*	*HAI & SRE*	*Mortality Rates*	*Care Transitions*	*Preventable Readmissions*	*Physical Symptom / Psychosocial Needs E&M*	*Affordable and Timely Access to Care*	*NPP's Identified Overuse Areas*	*Clinical Preventive Services***	*Healthy Lifestyle Behaviors***	*Community Health Index*
Sample Measures and Practices	*CAHPS** *Family Evaluation of Hospice Care (FEHC)**	*Medical Home System Survey**	*LBP**	*SSI** *CLABSI** *CAUTI** *SRE** *Drugs to be Avoided in the Elderly**	*30-day Mortality Rates for:* *AMI** *Heart Failure** *Pneumonia** *PCI**	*CTM-3** *Timely Transmission of Transition Record** *Transition Record with Specified Elements Received by Discharged Patients** *Follow-Up After Hospitalization for Mental Illness**	*30-day Readmission Rates for:* *AMI** *Heart Failure** *Pneumonia**	*Comfortable Dying**	*Timely Access to Physician (CWF)* *Lack of Follow-up Care Prevented Due to Cost (CWF)* *Late Entry into Prenatal Care (HRSA)*	*Antibiotics** *LBP Imaging** *C-Section**	*Breast, Cervical, Colorectal Screenings** *Child & Adult Pneumonia Influenza Immunizations** *Health Partners Composite* *** Need to address aspirin, blood pressure, cholesterol, smoking counseling*	*Smoking Cessation Counseling** *BMI** *Young Adult Health Care Survey (YAHCS)** *Promoting Healthy Development Survey (PHDS)** *Health Partners Composite* *** Need to address smoking, nutrition, physical activity, risky alcohol use*	*MATCH (Univ. of Wisconsin)* *Prevention Quality Indicators (PQI)**
***NQF Endorsed**				*NQF Safe Practices for Better Healthcare**		*NQF Preferred Practices and Performance Measures for Measuring and Reporting Care Coordination (awaiting NQF Board ratification)*		*NQF Preferred Practices for Palliative and Hospice Care Quality**					

Note: Although the proposed priorities are categorized by HHS pillar as an organizing framework, NPP believes each of these priorities offers opportunities for improving quality, affordability, and health. The priority area of infrastructure supports is not captured in this table as it is intended to address the underlying system changes needed to achieve all of the priorities.

Source: NPP, 2010, pp. 7

National Priorities Partnership:
Summary of NPP's Proposed Goals and Measure Concepts

National Priority: Work with communities to promote wide use of best practices to enable healthy living and well-being.

GOALS	Measure Concepts
Promote healthy living and well-being through community interventions that result in improvement of social, economic, and environmental factors.	• Adequate social support • Emergency department visits for injuries • Healthy behavior index • Binge drinking • Obesity • Mental health • Dental caries and untreated dental decay • Use of the oral health system • Immunizations
Promote healthy living and well-being through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.	
Promote healthy living and well-being through receipt of effective clinical preventive services across the lifespan in clinical and community settings.	

National Priority: Promote the most effective prevention, treatment, and intervention practices for the leading causes of mortality, starting with cardiovascular disease.

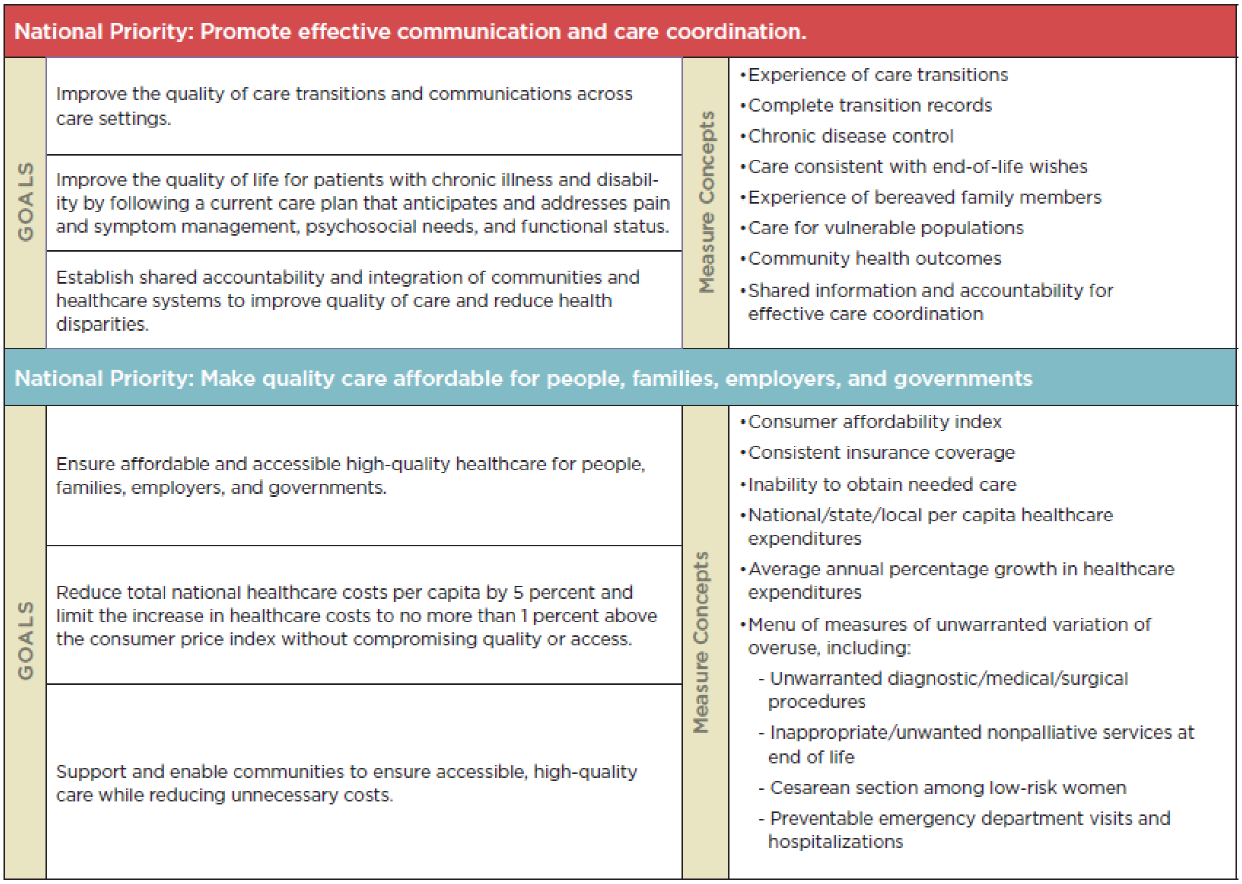
GOALS	Measure Concepts
Promote cardiovascular health through community interventions that result in improvement of social, economic, and environmental factors.	• Access to healthy foods • Access to recreational facilities • Use of tobacco products by adults and adolescents • Consumption of calories from fats and sugars • Control of high blood pressure • Control of high cholesterol
Promote cardiovascular health through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.	
Promote cardiovascular health through receipt of effective clinical preventive services across the lifespan in clinical and community settings.	

National Priority: Ensure person- and family-centered care.

GOALS	Measure Concepts
Improve patient, family, and caregiver experience of care related to quality, safety, and access across settings.	• Patient and family experience of quality, safety, and access • Patient and family involvement in decisions about healthcare • Joint development of treatment goals and longitudinal plans of care • Confidence in managing chronic conditions • Easy-to-understand instructions to manage conditions
In partnership with patients, families, and caregivers—and using a shared decision-making process—develop culturally sensitive and understandable care plans.	
Enable patients and their families and caregivers to navigate, coordinate, and manage their care appropriately and effectively.	

National Priority: Make care safer.

GOALS	Measure Concepts
Reduce preventable hospital admissions and readmissions.	• Hospital admissions for ambulatory-sensitive conditions • All-cause hospital readmission index • All-cause healthcare-associated conditions • Individual healthcare-associated conditions • Inappropriate medication use and polypharmacy • Inappropriate maternity care • Unnecessary imaging
Reduce the incidence of adverse healthcare-associated conditions.	
Reduce harm from inappropriate or unnecessary care.	



National Priority: Promote effective communication and care coordination.			
GOALS	Improve the quality of care transitions and communications across care settings.	Measure Concepts	•Experience of care transitions •Complete transition records •Chronic disease control •Care consistent with end-of-life wishes •Experience of bereaved family members •Care for vulnerable populations •Community health outcomes •Shared information and accountability for effective care coordination
	Improve the quality of life for patients with chronic illness and disability by following a current care plan that anticipates and addresses pain and symptom management, psychosocial needs, and functional status.		
	Establish shared accountability and integration of communities and healthcare systems to improve quality of care and reduce health disparities.		
National Priority: Make quality care affordable for people, families, employers, and governments			
GOALS	Ensure affordable and accessible high-quality healthcare for people, families, employers, and governments.	Measure Concepts	•Consumer affordability index •Consistent insurance coverage •Inability to obtain needed care •National/state/local per capita healthcare expenditures •Average annual percentage growth in healthcare expenditures •Menu of measures of unwarranted variation of overuse, including: - Unwarranted diagnostic/medical/surgical procedures - Inappropriate/unwanted nonpalliative services at end of life - Cesarean section among low-risk women - Preventable emergency department visits and hospitalizations
	Reduce total national healthcare costs per capita by 5 percent and limit the increase in healthcare costs to no more than 1 percent above the consumer price index without compromising quality or access.		
	Support and enable communities to ensure accessible, high-quality care while reducing unnecessary costs.		

Source: *NPP, 2011, pp 6-7*

State of the USA Health Indicators

IOM Report on key indicators

Health Outcomes

- Life Expectancy at Birth
- Infant Mortality (deaths of infants aged under one year per 1,000 live births)
- Life Expectancy at Age 65
- Injury Related Mortality (Age-adjusted mortality rates due to intentional or unintentional injuries)
- Self-Reported Health Status
- Unhealthy Days, Physical and Mental in the last 30 days
- Chronic Disease Prevalence (diabetes, cardiovascular disease, chronic obstructive pulmonary disease, asthma, cancer and arthritis)
- Serious Psychological Distress (K6 scale)

Health-Related Behaviors

- Smoking
- Physical Activity (moderate physical activity at least five days a week for 30 minutes a day)
- Excessive Drinking (per occasion and per day)
- Nutrition (Healthy Eating Index)
- Obesity (Body Mass Index > 30)
- Condom Use

Health Systems

- Health Care Expenditures (per capita health care spending)
- Insurance Coverage
- Unmet Medical, Dental, and Prescription Drug Needs
- Preventive Services (age-appropriate screening services and flu vaccination)
- Preventable Hospitalizations (ambulatory care-sensitive conditions)
- Childhood Immunization

Source: *IOM, 2008*

Leading Health Indicators for Healthy People 2020

Access to Health Services
- Persons with medical insurance
- Persons with a usual primary care provider

Clinical Preventive Services
- Adults who receive a colorectal cancer screening based on the most recent guidelines
- Adults with hypertension whose blood pressure is under control
- Adult diabetic population with an A1c value greater than 9 percent
- Children aged 19 to 35 months who receive the recommended doses of DTaP, polio, MMR, Hib, hepatitis B, varicella, and PCV vaccines

Environmental Quality
- Air Quality Index (AQI) exceeding 100
- Children aged 3 to 11 years exposed to secondhand smoke

Injury and Violence
- Fatal injuries
- Homicides

Maternal, Infant, and Child Health
- Infant deaths
- Preterm births

Mental Health
- Suicides
- Adolescents who experience major depressive episodes

Nutrition, Physical Activity, and Obesity
- Adults who meet current Federal physical activity guidelines for aerobic physical activity and muscle-strengthening activity
- Adults who are obese
- Children and adolescents who are considered obese
- Total vegetable intake for persons aged 2 years and older

Oral Health
- Persons aged 2 years and older who used the oral health care system in past 12 months

Reproductive and Sexual Health
- Sexually active females aged 15 to 44 years who received reproductive health services in the past 12 months
- Persons living with HIV who know their serostatus

Social Determinants

- Students who graduate with a regular diploma 4 years after starting 9th grade

Substance Abuse

- Adolescents using alcohol or any illicit drugs during the past 30 days
- Adults engaging in binge drinking during the past 30 days

Tobacco

- Adults who are current cigarette smokers
- Adolescents who smoked cigarettes in the past 30 days

Source: *HHS, 2012*

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Vision for Improving Measurement of Health, Care, and Costs

Vision for Improving Measurement
of Health, Care, and Costs

The Triple Aim: Care, Health, And Cost

The remaining barriers to integrated care are not technical; they are political.

by Donald M. Berwick, Thomas W. Nolan, and John Whittington

ABSTRACT: Improving the U.S. health care system requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care. Preconditions for this include the enrollment of an identified population, a commitment to universality for its members, and the existence of an organization (an "integrator") that accepts responsibility for all three aims for that population. The integrator's role includes at least five components: partnership with individuals and families, redesign of primary care, population health management, financial management, and macro system integration. [*Health Affairs* 27, no. 3 (2008): 759–769; 10.1377/hlthaff.27.3.759]

Congestive heart failure (CHF) is the most common reason for admission of Medicare patients to a hospital.[1] Sadly, 40 percent of Medicare patients discharged after admission for CHF are readmitted within ninety days, even though well-designed demonstration projects have shown for years that that rate can be reduced by more than 80 percent with proper management of patients.[2] Patients experience this reactive system as one providing poor service and lacking memory. Caregivers experience frustration, despite their best efforts.

■ **U.S. health system scorecard.** CHF care is not an isolated case. It is a prime example of what goes wrong when a health care system lacks the capacity to integrate its work over time and across sites of care. The recent "Scorecard" from the Commonwealth Fund Commission on a High Performance Health System gives the U.S. health care system an overall score of 66 percent, with 100 percent referring to the top decile of known performance.[3] The commission notes that even though U.S. health care expenditures are far higher than those of other developed countries, our results are no better. Despite spending on health care being nearly double that of the next most costly nation, the United States ranks thirty-first among nations on life expectancy, thirty-sixth on infant mortality, twenty-eighth on male healthy life expectancy, and twenty-ninth on female healthy life expectancy.[4] As a side effect of the

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cost burden, the United States is the only industrialized nation that does not guarantee universal health insurance to its citizens. We claim we cannot afford it.

■ **Care improvement efforts.** Most recent efforts to improve the quality of health care have aimed to reduce defects in the care of patients at a single site of care in all six dimensions identified by the Institute of Medicine (IOM): safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity.[5] Slow progress in each of these is occurring, as measurements, incentives, knowledge, will, and experiments come increasingly into alignment. However, the task of improving individuals' care is hardly completed. In the wave of projects on "pay-for-performance" (P4P) and public reporting, policymakers, payers, and health care leaders are still struggling to make highly reliable and safe health care a norm rather than an exception.[6] Moreover, too few improvement efforts address defects in care across the continuum, such as those that plague patients with CHF.

Defining The "Triple Aim"

Work to improve site-specific care for individuals should expand and thrive. In our view, however, the United States will not achieve high-value health care unless improvement initiatives pursue a broader system of linked goals. In the aggregate, we call those goals the "Triple Aim": improving the individual experience of care; improving the health of populations; and reducing the per capita costs of care for populations.

■ **Interdependent goals.** The components of the Triple Aim are not independent of each other. Changes pursuing any one goal can affect the other two, sometimes negatively and sometimes positively. For example, improving care for individuals can raise costs if the improvements are associated with new, effective, but costly technologies or drugs. Conversely, eliminating overuse or misuse of therapies or diagnostic tests can lead to both reduced costs and improved outcomes. The situation is made more complex by time delays among the effects of changes. Good preventive care may take years to yield returns in cost or population health.

■ **An exercise in balance.** Pursuit of the Triple Aim is an exercise in balance and will be subject to specified policy constraints, such as decisions about how much to spend on health care or what coverage to provide and to whom. The most important of all such constraints, we believe, should be the promise of equity; the gain in health in one subpopulation ought not to be achieved at the expense of another subpopulation. But that decision lies in the realms of ethics and policy; it is not technically inherent in the Triple Aim.

A health system capable of continual improvement on all three aims, under whatever constraints policy creates, looks quite different from one designed for the first aim only. The balanced pursuit of the Triple Aim is not congruent with the current business models of any but a tiny number of U.S. health care organizations. For most, only one, or possibly two, of the dimensions is strategic, but not all three. Thus, we face a paradox with respect to pursuit of the Triple Aim. From

"The Holy Grail of universal coverage may remain out of reach unless we can reduce per capita costs."

the viewpoint of the United States as a whole, it is essential; yet from the viewpoint of individual actors responding to current market forces, pursuing the three aims at once is not in their immediate self-interest.

Take hospitals as an example. Under current market dynamics and payment incentives, it is entirely rational for hospitals to try to fill beds and to expand services even though the work of Elliott Fisher and John Wennberg strongly predicts the net effect to be much higher cost and no higher quality.[7] Most hospitals seem to believe that they can protect profits best by protecting and increasing revenues. Higher efficiency in local production can help, too, but systemic efficiencies that reduce revenues or admission rates are threats to profit. The same payment dynamics often lead hospitals to focus only on care within their walls, viewing CHF readmissions, for example, as indicating defects outside the hospital, not as their responsibility to avert.

■ **A "tragedy of the commons."** Rational common interests and rational individual interests are in conflict. Our failure as a nation to pursue the Triple Aim meets the criteria for what Garrett Harden called a "tragedy of the commons."[8] As in all tragedies of the commons, the great task in policy is not to claim that stakeholders are acting irrationally, but rather to change what is rational for them to do. The stakes are high. Indeed, the Holy Grail of universal coverage in the United States may remain out of reach unless, through rational collective action overriding some individual self-interest, we can reduce per capita costs.

■ **Obstacles to pursuit of the Triple Aim.** The changes we would need to mobilize pursuit of the Triple Aim are large, and the obstacles are daunting. Among the biggest barriers are supply-driven demand; new technologies including many with limited impact on outcomes; physician-centric care; little or no foreign competition to spur domestic change, as it does in manufacturing; and too little appreciation of system knowledge among clinicians and organizations, leading them to suboptimize the components of the system with which they are most familiar, at the expense of the whole.

■ **Promising innovations.** Despite these obstacles, a handful of innovators are starting to challenge the U.S. health care market. These disruptive innovations are by no means yet mainstream, but the examples align surprisingly well with the objectives of the Triple Aim. For example, innovations in primary care such as the medical home, as well as "Minute Clinics" and other retail health care providers are challenging the prevailing approach to primary care.[9] Experiments in telecommunications are offering care that is no longer location-specific.[10] One form of foreign competition—"medical tourism"—is beginning to catch on. Also, a few hospitals, such as Virginia Mason Medical Center, Denver Health, and ThedaCare, are learning to use systems knowledge to reduce costs and improve profit, such as by adapting "lean production" to health care.[11]

■ **Measuring health care quality.** In general, opacity of performance is not a major obstacle to the Triple Aim. Many tools are in hand to construct part of a balanced portfolio of measures to track the experience of a population on all three components. At the Institute for Healthcare Improvement (IHI), for example, we have developed and are using a balanced set of systemwide measures closely related to the Triple Aim.[12] A more complete set of system metrics would include ways to track the experience of care in ambulatory settings, including patient engagement, continuity, and clinical preventive practices.

■ **Measuring costs and health status.** Measuring per capita costs is still a big challenge; it requires that we capture all relevant expenditures, index them appropriately to local market circumstances, and be able to measure actual costs in a care system whose current methods of pricing and discounting obscure them. Population health measures would require some form of registration or sampling for defined populations and would be speeded by widespread implementation of electronic health record systems. Citing one serious gap, the IOM recently concluded that measures of both cost and care across the continuum, impeded by the fragmentation of delivery itself, still need much more developmental work.

Preconditions For Pursuit Of The Triple Aim

Despite the social need and the feasibility of measurement, actual pursuit of the Triple Aim remains the exception. What would be the preconditions for changing that?

We suggest that three inescapable design constraints underlie effective accomplishment of the Triple Aim: (1) recognition of a population as the unit of concern, (2) externally supplied policy constraints (such as a total budget limit or the requirement that all subgroups be treated equitably), and (3) existence of an "integrator" able to focus and coordinate services to help the population on all three dimensions at once.

■ **Specifying a population of concern.** A "population" need not be geographic. What best defines a *population*, as we use the term, is probably the concept of enrollment. (This is different from the prevailing meaning of the word *enrollment* in U.S. health care today, which denotes a financial transaction, not a commitment to a healing relationship.) A registry that tracks a defined group of people over time would create a "population" for the purposes of the Triple Aim. Other examples of populations are "all of the diabetics in Massachusetts," "people in Maryland below 300 percent of poverty," "members of Group Health Cooperative of Puget Sound," "the citizens of a county," or even "all of the people who say that Dr. Jones is their doctor." Only when the population is specified does it become, in principle, possible to know about its experiences of care, its health status, and the per capita costs of caring for it. Under current conditions, such registries are rare in the United States, especially for geographically defined populations. Creating them will require research, development, and investment.

■ **Policy constraints.** The policy constraints that shape the balance sought among the three aims are not automatic or inherent in the idea. Rather, they derive from the processes of decision making, politics, and social contracting relevant to the population involved. For example, a nation or state might or might not decide that "universal coverage" is mandatory; a community in a town meeting or an employer in negotiation with a labor union might or might not decide to spend no more than *x* dollars per capita or *y* dollars per year on health care. Logically—that is, mathematically—optimizing on three aims at once requires constraints on at least two of them.

■ **Integrator.** An "integrator" is an entity that accepts responsibility for all three components of the Triple Aim for a specified population. Importantly, by definition, an integrator cannot exclude members or subgroups of the population for which it is responsible. The simplest such form, such as Kaiser Permanente, has fully integrated financing and either full ownership of or exclusive relationships with delivery structures, and it is able to use those structures to good advantage. We believe, however, that other models can also take on a strong integrator role, even without unified financing or a single delivery system. That role might be within the reach of a powerful, visionary insurer; a large primary care group in partnership with payers; or even a hospital, with some affiliated physician group, that seeks to be especially attractive to payers.

In crafting care, an effective integrator, in one way or another, will link health care organizations (as well as public health and social service organizations) whose missions overlap across the spectrum of delivery. It will be able to recognize and respond to patients' individual care needs and preferences, to the health needs and opportunities of the population (whether or not people seek care), and to the total costs of care. The important function of linking organizations across the continuum requires that the integrator be a single organization (not just a market dynamic) that can induce coordinative behavior among health service suppliers to work as a system for the defined population.

Functions Of An Integrator

■ **Involving individuals and families.** Pursuit of the Triple Aim requires that the population served become continually better informed about both the determinants of their own health status and the benefits and limitations of individual health care practices and procedures. An effective integrator would work persistently to change the "more-is-better" culture through transparency, systematic education, communication, and shared decision making with patients and communities, rather than by restricting access, shifting costs, or erecting administrative hurdles to care. Many members of the population, especially those with chronic illnesses, will need someone who can work with them to establish a plan for their ongoing care, guide them through the technological jungle of acute care, advocate for them, and interpret.

■ **Redesign of primary care services and structures.** We believe that any effective integrator will strengthen primary care for the population. To accomplish this, physicians might not be the sole, or even the principal, providers. Recently, physicians and other clinicians have proposed principles for expanding the role of primary care under the title of the medical home. This expanded role includes establishing long-term relations between patients and their primary care team; developing shared plans of care; coordinating care, including subspecialists and hospitals; and providing innovative access to services through improved scheduling, connection to community resources, and new means of communication among individuals, families, and the primary care team facilitated by a patient-controlled personalized health record. The integrator would assume responsibility for building the capability and infrastructure to enable primary care practices to function in this expanded role.

■ **Population health management.** The integrator would be responsible for deploying resources to the population, or for specifying to others how resources should be deployed. Segmentation of the population, perhaps according to health status, level of support from family or others, and socioeconomic status, will facilitate efficient and equitable resource allocation.[13] The growing availability of high-quality health information on the Internet will help all segments manage their own care and understand options for treatment.

Today's individual health care processes are designed to respond to the acute needs of individual patients, rather than to anticipate and shape patterns of care for important subgroups. An integrator would act differently, assigning much more value and many more resources, for example, to the monitoring and interception of early signs of deterioration among the 100 CHF patients in a doctor's panel or the 1,000 CHF patients who used the hospital last year.

Famously, the "actual" causes of mortality in the United States lie in behavior that the individual health care system addresses unreliably or not at all, such as smoking, violence, physical inactivity, poor nutrition, and unsafe choices.[14] An integrator would increase preventive efforts. An integrator would also encourage and cooperate with governmental policies, agencies, and programs to discourage smoking, combat obesity, provide alternatives to violence and substance abuse, and address community determinants of mental health problems.

■ **Financial management system.** The broken financing system of the present mirrors the fragmented care system. An effective integrator would assure that payment and resource allocation support the Triple Aim. An important first step for a systems approach to cost control would be defining, measuring, and making transparent the per capita cost of care for a defined population. For example, companies could begin to show on employees' paychecks the amount of money spent per employee by the company to provide health insurance. The Centers for Medicare and Medicaid Services (CMS) could provide regions with cost information per beneficiary to allow comparisons of costs and inflation across the country.

A mainstay of reduction and control of per capita costs would be yearly initiatives to reduce waste in all of its forms, especially procedures, tests, and visits that represent rework, errors, unscientific care, or otherwise valueless services. George Isham, medical director of HealthPartners in Minneapolis, has called for a project to identify the ten most common forms of waste in each medical specialty.[15] Any integrator collaborating on improvement of value with its suppliers of specialty care would be very interested in Isham's list. An indication of progress on the Triple Aim would be doctors' leading and energetically participating in such efforts.

Perhaps the most powerful needed change is to disrupt the dynamics of supply-driven care and instead to match supply better to underlying needs. An integrator would approach new technologies and capital investments with skepticism and require that a strong burden of proof of value lie with the proponent. Operating budgets would encourage thinking across boundaries. An integrator would ask, "Might two additional home outreach nurses be better for the Triple Aim than another cardiologist?" Capital budgets would be informed by the insights of Fisher and Wennberg, and good integrators would encourage through incentives—and, if needed, regulations—strict limits on the growth of facilities.

The hallmarks of proper financial management in a system pursuing the Triple Aim, we suspect, are government policies, purchasing contracts, or market mechanisms that lead to a cap on total spending, with strictly limited year-on-year growth targets.

■ **System integration at the macro level.** A conscientious integrator would aspire to produce or contract for individual care and population-based interventions that are evidence-based and highly reliable. To achieve that, all in the system of care would need access to up-to-date medical knowledge, standardized definitions of *quality* and *cost*, and evidence and measurement collected and distributed by a thoroughly trustworthy body. In effect, patients, caregivers, organizations, and managers would know the "state of the system" with respect to its reliability, adherence to evidence, cost, and progress in improvement.

In most cases, the integrator would not be a direct provider of all necessary services. Instead, it would need to commission some services from suppliers through business relationships consciously designed to facilitate pursuit of the Triple Aim. Michael Porter and Elizabeth Teisberg have called for a redefinition of competition in health care.[16] They assert that value is added by care that produces the best outcomes at the lowest cost over time. An integrator, following their logic, might contract with a multifunctional group of providers to serve a specific subpopulation.

Precedents And Possibilities

The Triple Aim is far from a totally new idea. As one would expect, organizations and other stakeholders in a variety of countries that begin with a population in mind tend to want to achieve all three goals at once. Among these stakeholders are (1) government-sponsored or -owned health care systems that have legally chartered duties to defined populations and that own facilities, employ clinicians, and provide and manage clinical services (in the United States, these include the Veterans Health Administration, the Indian Health Service, and the Military Health Command); (2) classical staff- and group-model health maintenance organizations (HMOs), such as Kaiser Permanente, HealthPartners, and Group Health Cooperative of Puget Sound, which combine insurance and care delivery functions (although usually not public health systems) for enrolled populations; and (3) national and other governmental health care systems that aggregate tax revenues into global budgets and, through employment, ownership, and contracting, ensure care for populations. Examples include the National Health Service (NHS) in the United Kingdom and health care in Sweden, where counties act as integrators, using general tax revenues to fund the comprehensive care systems that county-level executives organize and improve for their entire population.[17]

In the United States, a few additional cases of Triple Aim–oriented organizations have emerged. Some employers, fed up with out-of-control costs but unwilling to give up trying to ensure proper care for their employees, have started their own care systems, reminiscent of the roots of Kaiser Permanente. For example, QuadGraphics, a large U.S. publishing company, started QuadMed, a wholly owned subsidiary that provides care to QuadGraphics employees using a highly innovative model of strong primary care as the mainstay.[18]

Occasional entrepreneurial hospital-based systems, often with very high market share and strong community roots, such as Intermountain Health Care, Geisinger Health System, Bellin Health System, and (for care of the underserved) Denver Health, try to knit together components of the care system in virtual aggregates through technical support and innovative contracts. The numerous recent state-level initiatives for universal health insurance coverage inevitably face the Triple Aim as the only route to affordability; Massachusetts, as one example, has established a Quality and Cost Council to try to determine how to keep all three aims in a single field of vision.[19]

■ **HMOs as integrators.** So what happened to HMOs? As conceived by their greatest champion, Paul Ellwood, HMOs were, or were intended to be, integrators exactly as we propose, in pursuit of the Triple Aim.[20] On closer inspection, the HMO movement was eventually defined by its organizational structure rather than its aims and performance. The experience of people enrolled in HMOs was not sufficiently improved to overcome the restriction of choice of providers or the perceived barriers to access to specialists that became part of the HMO model. Because they restricted care, HMOs were vulnerable to competitive retaliation by indemnity insurers and others, which began offering products called “HMO” or “managed care” that merely managed money, not care. Furthermore, proponents of HMOs might have overestimated the cost-saving potential of proper preventive care, instead of

“Innovations in payment design encourage integrated behavior without the managerial superstructure of an HMO.”

viewing population health status and per capita cost control as separate aims.[21] Finally, HMOs were competing for doctors and acute care suppliers in an environment in which these providers were in control of demand and thus revenue. The HMO was not an attractive business alternative for them.

■ **Encouraging signs for integrated care.** Even with the similarity between an HMO and our view of the integrator, we are encouraged in large measure because the possibilities of integrated care have so thoroughly changed with the advent of electronic support systems and the possibilities for virtual integration and instant communication that were unimaginable when HMOs were first described. Fisher’s recent proposals for virtual integration of care through extended medical staffs, for example, represent innovations that draw on some of the principles of classical HMOs, but with entirely new processes and relationships at their core.[22] Innovations in payment design, such as bundled payment experiments by the CMS for chronic disease management and Harold Luft’s conceptualization of case rates for local microsystems, offer interesting approaches to encouraging integrated behavior without the managerial superstructure of an HMO.[23]

■ **What it takes to progress toward integrated care.** From the (we hope temporary) failure of the best features of the HMO concept we take the lesson not that all integrated care is destined to fail, but rather that pursuit of the Triple Aim threatens the U.S. status quo health care system. The current behavior, destructive of the Triple Aim and inimical to the best aspects of sound, managed care, is a predictable, indeed inevitable, consequence of the current rules. If we want different behavior, we will need new financing and competitive dynamics. What new financing or dynamics, different from today’s, would lead rational hospitals to try to reduce readmissions dramatically for CHF?

If we could ever find the political nerve, we strongly suspect that financing and competitive dynamics such as the following, purveyed by governments and payers, would accelerate interest in the Triple Aim and progress toward it: (1) global budget caps on total health care spending for designated populations, (2) measurement of and fixed accountability for the health status and health needs of designated populations, (3) improved standardized measures of care and per capita costs across sites and through time that are transparent, (4) changes in payment such that the financial gains from reduction of per capita costs are shared among those who pay for care and those who can and should invest in further improvements, and (5) changes in professional education accreditation to ensure that clinicians are capable of changing and improving their processes of care. With some risk, we note that the simplest way to establish many of these environmental conditions is a single-payer system, hiring integrators with prospective, global budgets to take care of the health needs of a defined population, without permission to exclude any member of the population.

Indicators Of Progress

In our lighter moments, we have tried to imagine the most elegant possible "Triple Aim Test," asking, "How would we know at first glance that the care for a population is actually making progress on the Triple Aim?" Our proposed test has only three items. First, hospitals involved in the Triple Aim would be trying to be emptier, not fuller. They would celebrate as success that the hospital is less and less often needed by the population. Second, Fisher and Wennberg would be happier. They would observe that the dynamics of supply-driven care are no longer strong and that patients pull resources, rather than vice versa. And third, patients would say of those who try to maintain and restore their health: "They remember me." They would recognize that the health care system is mindful of their needs, wants, and opportunities for health even when they themselves forget. Health care would also be mindful that people have excellent uses for their wealth other than paying for care they do not need or for illnesses they could have avoided.

WHETHER OR NOT THE TRIPLE AIM is within reach for the United States has become less and less a question of technical barriers. From experiments in the United States and from examples of other countries, it is now possible to describe feasible, evidence-based care system designs that achieve gains on all three aims at once: care, health, and cost. The remaining barriers are not technical; they are political. The superiority of the possible end state is no longer scientifically debatable. The pain of the transition state—the disruption of institutions, forms, habits, beliefs, and income streams in the status quo—is what denies us, so far, the enormous gains on components of the Triple Aim that integrated care could offer.

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2012 Annual Progress Report to Congress

National Strategy for Quality Improvement in Health Care

Submitted by the U.S. Department of Health and Human Services

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Executive Summary

The National Strategy for Quality Improvement in Health Care (the National Quality Strategy) sets a course for improving the quality of health and health care for all Americans. It serves as a blue print for health care stakeholders across the country – patients, providers, employers, health insurance companies, academic researchers, and local, State, and Federal governments – that helps prioritize quality improvement efforts, share lessons, and measure our collective success.

The initial National Quality Strategy, published in March 2011, established three aims and six priorities for quality improvement (see Exhibit 1). This report details some of the work conducted in public and private sectors over the past year to advance and further refine those aims and priorities.

Exhibit 1. National Quality Strategy Aims and Priorities

National Quality Strategy's three aims:

1. ***Better Care:*** *Improve the overall quality of care, by making health care more patient-centered, reliable, accessible, and safe.*
2. ***Healthy People/Healthy Communities:*** *Improve the health of the U.S. population by supporting proven interventions to address behavioral, social, and environmental determinants of health in addition to delivering higher-quality care.*
3. ***Affordable Care:*** *Reduce the cost of quality health care for individuals, families, employers, and government.*

National Quality Strategy's six priorities:

1. *Making care safer by reducing harm caused in the delivery of care.*
2. *Ensuring that each person and family are engaged as partners in their care.*
3. *Promoting effective communication and coordination of care.*
4. *Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.*
5. *Working with communities to promote wide use of best practices to enable healthy living.*
6. *Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new health care delivery models.*

Collaboration with Stakeholders

The National Quality Strategy represents a collaborative effort across all sectors of the health care community. One of our key partners has been the National Quality Forum (NQF), which the U.S. Department of Health and Human Services (HHS) enlisted to recommend goals and key measures for each of the six National Quality Strategy priorities. The NQF is an independent nonprofit organization that refines and endorses standards and measures of health care quality through a national consensus based approach. The NQF convened the National Priorities Partnership, a collaborative of major health care stakeholders established to set national priorities and goals for improving health care quality throughout the country. The National Priorities Partnership collected input, and in September 2011, delivered its recommendations entitled *Input to the Secretary of Health and Human Services on Priorities for the National Quality Strategy*. This feedback, discussed in detail in this report, has guided HHS efforts to implement the National Quality Strategy.

The National Quality Strategy has also led to new collaborations across agencies in the Federal government, most notably through the Interagency Working Group on Health Care Quality, which convened for the first time in March 2011. Through the Interagency Working Group on Health Care Quality, Federal agencies are identifying ways to maximize resources to improve quality, align measures, and reduce duplication of efforts.

A National Approach to Measuring Quality

One of the primary objectives of the National Quality Strategy is to build a national consensus on how to measure quality so that stakeholders can align their efforts for maximum results. The strategy itself serves as a framework for quality measurement, measure development, and analysis of where everyone can do more, including across HHS agencies and programs as well as in the private sector. This alignment of measurement creates shared accountability across health systems and stakeholders around the country for improving patient-centered outcomes.

In the past year, HHS has also adopted a more transparent process for selecting quality measures for new and existing programs, incorporating an opportunity for public feedback prior to their formal adoption in rulemaking. To reduce the burden on health care providers and promote comparability of measurement data, the Department is working to align measures across CMS reporting initiatives, such as the EHR Incentive Program's Meaningful Use requirements.

Aligning Federal & State Efforts to the National Quality Strategy

There are quality improvement initiatives underway throughout the Federal government and in each of the States. The National Quality Strategy seeks to reduce duplication and create efficiencies – not just in measurement but in quality improvement efforts as well. For example, activities are well underway to assure that the National Quality Strategy supports and reinforces improvements in population health consistent with the Strategic Directions, Priorities and Recommendations of the National Prevention Strategy: America's Plan for Better Health and Wellness. HHS is also ensuring that new initiatives proposed by the Department align with the National Quality Strategy.

Further, divisions within HHS have developed initial agency-specific strategic quality plans to align their mission and programs with the National Quality Strategy aims and priorities. A pioneer in this effort, the Substance Abuse and Mental Health Services Administration (SAMHSA), developed the National Behavioral Health Quality Framework to reflect a SAMHSA-specific approach to implementing the National Quality Strategy. This process has prompted additional stakeholder engagement in SAMHSA's efforts to develop a core set of behavioral health quality and performance measures for its use and for other major behavioral health services purchasers. This work serves as a model for other agencies as they implement their strategic quality plans.

The Strategy serves also as an opportunity to spread best practices seamlessly between State and Federal governments. States have also taken the initiative to align quality improvement priorities in their public health plans and Medicaid programs with the National Quality Strategy. This report highlights two States, Colorado and Ohio, that have been particularly forward thinking in this regard. Ohio has identified performance measures aligned with the six National Quality Strategy priorities and will provide incentives to privately operated Medicaid health plans that excel in these areas and will penalize plans that fail to meet the standards. Colorado has brought together State departments and agencies to share data around key National Quality Strategy measures to improve access to Colorado's publicly funded health care system.

Focus on Priorities: Key Measures & Long Term Goals

This edition of the National Quality Strategy indicates how it will pursue – and measure— improvement in the six priority areas identified in last year's report. The National Priorities Partnership's recommendations of measures to monitor National Quality Strategy priorities contributed to the selection of the key measures for each priority described in this report. These selected key measures provide population-based, nationally representative information. In two National Quality Strategy priority areas, HHS has launched major improvement initiatives in the past year: the Partnership for Patients and the Million Hearts Campaign. In this report, we have formally adopted the measures and aspirational targets set by those initiatives into the National Quality Strategy to drive improvement. During this implementation year, HHS will identify aspirational targets for the key measures selected for each of the four remaining priority areas. This report also details long-term goals for each of the six priority areas, established in consultation with the National Priorities Partnership.

Looking Forward

The National Quality Strategy is an evolving guide for the Nation. As its implementation continues, the National Quality Strategy will be refined, based on lessons learned in the public and private sectors, emerging best practices, new research findings, and the changing needs of the American people. Subsequent annual reports to Congress and the public will include updates on the Strategy and the Nation's progress in meeting the three aims of better care, improved health for people and communities, and making quality care more affordable.

Based on these aims, Ohio's Medicaid Quality Strategy has identified six initial clinical focus areas: high-risk pregnancy/premature births, behavioral health, cardiovascular disease, diabetes, asthma, and upper respiratory infections.

Ohio Medicaid identified quality performance measures for the six clinical focus areas to hold health plans accountable for improving performance. In addition, Ohio will provide performance incentives to health plans that in these areas and will penalize plans that fail to meet standards.

Focus on Priorities: Key Measures and Long Term Goals

At the heart of the National Quality Strategy are six priorities, which will focus national quality improvement efforts. Since establishing these priorities, the National Quality Strategy has added more detail on how it will pursue – and measure - improvement in these areas. The additional details below – key measures, aspirational targets, and long-term goals – are the result of stakeholder engagement, measure review, and governmental harmonization efforts described earlier in this report.

The key measures proposed in this year's National Quality Strategy were chosen based on the National Priorities Partnership's list of 59 measure concepts,[11] as well as current capabilities to obtain reliable, nationally-representative data. In some priority areas, the aspirational targets reflect specific goals of new public-private partnerships established during 2011 (e.g., the Partnership for Patients and the Million Hearts campaign). For all priorities, future updates to the National Quality Strategy will use the measures below – as well as other consensus measures where appropriate – to set aspirational targets and track the progress of improvement efforts in each priority area.

In addition, the National Quality Strategy sets goals for long-term improvement in each priority area, which were largely adopted from National Priorities Partnership recommendations and will be assessed through key measures identified in this update or in future reports. These long-term goals are system wide objectives that can only be achieved through broad engagement of stakeholders.

Priority 1. Making Care Safer by Reducing the Harm Caused in the Delivery of Care

Health care-related errors continue to account for a significant amount of harm and death in the American health care system each year. The CDC estimates that healthcare-associated infections affect approximately 5% of hospitalized patients. Health care-related errors also impose a financial burden on the system; patients that do not die from a medical error often have longer and more expensive hospital stays. Eliminating health care associated infections and reducing the number of serious adverse medication events are important opportunities for success in making care safer.

In 2009, HHS released the *National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination*, and since then we have seen significant improvements in reducing the targeted infections. In 2010, there were 33 percent fewer central line associated blood stream infections (CLABSIs) and an 18 percent reduction in MRSA infections when compared to the baseline period.[12] To build on these achievements, and to expand our focus to include other types of harm, HHS launched the *Partnership for Patients*, described below.

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[11] http://www.qualityforum.org/Setting_Priorities/NPP/Input_into_the_National_Quality_Strategy.aspx

[12] National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination.
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Nationwide Initiative—The Partnership for Patients *is a national patient safety and quality improvement initiative that has two goals: reducing preventable hospital-acquired conditions by 40 percent, and reducing 30-day hospital readmissions by 20 percent by the end of 2013. Through the Partnership, the CMS Center for Medicare and Medicaid Innovation (CMMI or Innovation Center) is investing up to $500 million in public-private hospital engagement networks that will help hospitals adopt proven strategies to reduce hospital-acquired conditions in their own facilities. So far, these hospital engagement networks include more than 3,900 hospitals nationwide, and quality improvement work is well underway.*

As part of the Partnership, CMS is also investing $500 million in the Community-based Care Transitions Program to reward hospitals, physicians, and those who partner with them to keep high-risk Medicare beneficiaries out of the hospital after discharge. (www.healthcare.gov/center/programs/partnership)

Long-Term Goals for Making Care Safer:

1. Reduce preventable hospital admissions and readmissions.
2. Reduce the incidence of adverse health care-associated conditions.
3. Reduce harm from inappropriate or unnecessary care.

Exhibit 2. Key Measures for National Quality Strategy Priority 1—Making Care Safer by Reducing the Harm Caused in the Delivery of Care

MEASURE FOCUS	KEY MEASURE NAME/DESCRIPTION	CURRENT RATE	ASPIRATIONAL TARGET
Hospital-acquired Conditions	Incidence of measurable hospital-acquired conditions	145 HACs per 1,000 admissions	Reduce preventable HACs by 40% by the end of 2013
Hospital Readmissions	All-payer 30-day readmission rate	14.4%, based on 32.9 million admissions	Reduce all readmissions by 20% by the end of 2013

*Source: Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, and Centers for Medicare and Medicaid Services, March 2012.

Priority 2. Ensuring That Each Person and Family Is Engaged in Their Care

The National Quality Strategy highlights the need to give individual patients and families an active role in the patient’s care. Health care should adapt to individual and family situations (e.g., varying cultures, languages, disabilities, health literacy levels, and social backgrounds). Creating care practices that support patient and family engagement in understanding their treatment options helps them make decisions that align with their values and preferences. Opportunities to implement practices that promote person- and family-centered care include integrating patient feedback on preferences, functional outcomes, and experiences of care into all care settings and care delivery. Additional opportunities include increasing use of electronic health records (EHRs) that include patient-generated data in EHRs; and regularly measuring patient engagement and self-management, shared decision-making, and patient-reported outcomes.

Nationwide Initiative—Linking Patient Experiences to Provider Payment *is now part of how Medicare pays for health care services. Through rigorous surveys measuring patient-provider communications and patient satisfaction known as Consumer Assessment of Health Care Providers and Systems surveys, Medicare learns which doctors and hospitals are successfully engaging patients in their care. Tying provider payments directly to patients' descriptions of their care experiences focuses the health care system on making sure that patients and their families are true partners in the prevention, diagnosis, treatment, and management of illness.*

Providers participating in the Medicare Shared Savings Program will be measured by the surveys, and their scores will be a key determinant in how much they are eligible to earn through the program. (http://www.cms.gov/aco) In the fall of 2012, patient experience performance will be used to calculate value-based incentive payments to hospitals, meaning that hospitals that clearly communicate with patients and make the health care system easier to navigate will be paid more than those that do not. (www.cms.gov/Hospital-Value-Based-Purchasing)

Long-Term Goals for Engaging Patients and Families:

1. Improve patient, family, and caregiver experience of care related to quality, safety, and access across settings.
2. In partnership with patients, families, and caregivers—and using a shared decision making process—develop culturally sensitive and understandable care plans.
3. Enable patients and their families and caregivers to navigate, coordinate, and manage their care appropriately and effectively.

Exhibit 3. Key Measures for National Quality Strategy Priority 2—Ensuring That Each Person and Family Is Engaged in Their Care

MEASURE FOCUS	KEY MEASURE NAME/DESCRIPTION	CURRENT RATE*
Timely Care	Adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted	14.1%
Decision-making	People with a usual source of care whose health care providers sometimes or never discuss decisions with them	15.4%

*Source: Agency for Healthcare Research and Quality, Center for Financing, Access, and Cost Trends, Medical Expenditure Panel Survey, 2009.

Priority 3. Promoting Effective Communication and Coordination of Care

Care coordination is a conscious effort to ensure that all key information needed to make clinical decisions is available to patients and their providers. Patients commonly receive medical services, treatments, and advice from multiple providers in many different care settings, each focusing on a particular specialty. Less than sufficient provider-to-provider and provider-to-patient communication may lead to delays in treatment and dangerous errors in medical information. Enhancing teamwork and increasing use of health information technologies to facilitate communication among providers and patients can improve care coordination. Through the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs, established by the Health Information Technology for Economic And Clinical Health (HITECH) Act, HHS has distributed more than $4.5 billion in incentive payments to nearly 1,700 hospitals and approximately 74,000 physicians and other health professionals who are using certified EHR systems that improve patient safety and coordination of care.

Multi-State Initiative*—The* ***Multi-payer Advanced Primary Care Practice Demonstration*** *Revitalizing the Nation's primary care system is foundational to achieving high quality, accessible, efficient health care for all Americans. To that end, CMS is currently partnering with State Medicaid programs, private insurers, and employers to support primary care practices that emphasize prevention, health information technology, care coordination, and shared decision making between patients and their providers. In this demonstration Medicare participates in State-run, multi-payer collaboratives to support enhanced primary care services. Medicare pays monthly care-management fees for Medicare beneficiaries in those practices, and the other payers, including Medicaid, contribute for their patients. Taken together, these new resources allow practices to invest in nurse care managers, nutrition counseling, electronic medical records, and to spend more time with each patient. Eight states are currently participating: Maine, Michigan, Minnesota, New York, North Carolina, Pennsylvania, Rhode Island, and Vermont. Approximately 332,000 Medicare beneficiaries are receiving care from the participating practices.*

Long-Term Goals for Promoting Effective Communication and Coordination of Care:

1. Improve the quality of care transitions and communications across care settings.
2. Improve the quality of life for patients with chronic illness and disability by following a current care plan that anticipates and addresses pain and symptom management, psychosocial needs, and functional status.
3. Establish shared accountability and integration of communities and health care systems to improve quality of care and reduce health disparities.

Exhibit 4. Key Measures for National Quality Strategy Priority 3—Promoting Effective Communication and Coordination of Care

MEASURE FOCUS	KEY MEASURE NAME/DESCRIPTION	CURRENT RATE
Patient-Centered Medical Home	Percentage of children needing care coordination who receive effective care coordination	69%*
3-item Care Transition Measure**	• During this hospital stay, staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left • When I left the hospital, I had a good understanding of the things I was responsible for in managing my health • When I left the hospital, I clearly understood the purpose for taking each of my medications	Data available October 2012**

* Source: Health Resources and Services Administration, Maternal and Child Health Bureau; Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children's Health, 2007.
**This report will be updated online to reflect baseline performance data from the Centers for Medicare and Medicaid Services in October 2012.

Priority 4. Promoting the Most Effective Prevention and Treatment Practices for the Leading Causes of Mortality, Starting with Cardiovascular Disease

Providing high-value care to patients that improves the length and quality of their lives is the goal of health care. Focusing national quality improvement efforts on diseases that kill the most Americans places cardiovascular disease at the top of the list. Moreover, effective strategies for preventing and treating heart disease and strokes are well documented. The National Quality Strategy identifies increasing blood pressure control in adults, reducing high cholesterol levels in adults, increasing the use of aspirin to prevent cardiovascular disease for appropriate populations, and decreasing smoking among adults as important opportunities to prevent and treat cardiovascular disease.

Nationwide Initiative—The Million Hearts Campaign *is a public-private sector initiative led by HHS to prevent 1 million heart attacks and strokes over the next 5 years. Cardiovascular disease is the leading cause of morbidity and mortality in the United States. Several preventive strategies can reduce the risk of developing cardiovascular disease: appropriate aspirin therapy for those who need it, blood pressure control, cholesterol management, and smoking cessation (the ABCS of cardiovascular disease). Among the many Millions Hearts activities are:*

- *Educational efforts to increase awareness about heart disease and prevention and to demonstrate how individuals can take control of their heart health;*
- *Discovery and dissemination of care practices that use interdisciplinary teams, health information technology, and incentives to optimize outcomes;*
- *Improving adherence to appropriate medications for the ABCS.*

Already, Million Hearts is partnering with many organizations around the country, including professional societies, consumer groups, employers, and insurers. The Georgetown University School of Medicine, for example, has intensified its emphasis on the powerful preventive benefits of the ABCS and on the role of teams in effective care delivery. (millionhearts.hhs.gov)

Long-Term Goals for Promoting the Best Prevention and Treatment Practices for the Leading Causes of Mortality:

1. Promote cardiovascular health through community interventions that result in improvement of social, economic, and environmental factors.
2. Promote cardiovascular health through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.
3. Promote cardiovascular health through receipt of effective clinical preventive services across the lifespan in clinical and community settings.

Exhibit 5. Key Measures for National Quality Strategy Priority 4—Promoting the Most Effective Prevention and Treatment Practices for the Leading Causes of Mortality, Starting with Cardiovascular Disease

MEASURE FOCUS	KEY MEASURE NAME/DESCRIPTION	CURRENT RATE	ASPIRATIONAL TARGET
Aspirin Use	People at increased risk of cardiovascular disease who are taking aspirin	47%*	65% by 2017
Blood Pressure Control	People with hypertension who have adequately controlled blood pressure	46%**	65% by 2017
Cholesterol Management	People with high cholesterol who have adequately managed hyperlipidemia	33%**	65% by 2017
Smoking Cessation	People trying to quit smoking who get help	23%***	65% by 2017

* Source: Centers for Disease Control and Prevention, National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), 2007-2008
** Source: Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES), 2005-2008
*** Source: NAMCS, 2005-2008

Priority 5. Working with Communities to Promote Best Practices for Healthy Living

Population health is influenced by many factors, including genetics, lifestyle, health care, and the physical and social environment. It is important to acknowledge that a fundamental purpose of health care is to improve the health of populations. Acute care is needed to treat injuries and illnesses of short duration, and chronic disease management is needed to minimize the effects of persistent health conditions. However, preventive services that prevent the onset of disease encourage the adoption of healthy lifestyles, and help patients to avoid environmental health risks hold the greatest potential for maximizing population health. The

National Quality Strategy identifies increasing the provision of clinical preventive services for children and adults, and increasing the adoption of evidence-based interventions to improve health, as important opportunities for success in promoting healthy living.

The Affordable Care Act requires many private insurance plans to provide coverage for and eliminate cost-sharing on certain recommended preventive health services, including colonoscopy screening for colon cancer, Pap smears and mammograms for women, well-child visits, flu shots for all children and adults, and many more. In addition, Medicare now covers recommended preventive services without coinsurance or deductibles. To date, more than 54 million Americans with private health insurance and 32.5 million Americans on Medicare have received at least one new preventive service without cost-sharing because of this provision. These changes in insurance coverage will be a significant driver, along with community-based initiatives, in achieving progress in this priority area.

***HHS Initiative—The Community Transformation Grants Program** supports community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. By promoting healthy lifestyles, especially among population groups experiencing the greatest burden of chronic disease, this investment is intended help improve health, reduce health disparities, and control health care spending.*

For example, Louisville, Kentucky is making healthy meals possible in school vending machines and through community gardens. This program builds on the lessons learned from its Healthy in a Hurry Program which featured healthy corner stores, fresh produce, and a produce manager hired from the neighborhood, and provided healthier options for 80,000 people.

In September 2011, the CDC awarded approximately $107 million in prevention funding to 61 states and communities and 7 national networks of community-based organizations serving approximately 120 million Americans. The CDC distributes these awards among State and local government agencies, tribes and territories, and State and local non-profit organizations. (http://www.cdc.gov/communitytransformation/)

Long-Term Goals for Working with Communities:

1. Promote healthy living and well-being through community interventions that result in improvement of social, economic, and environmental factors.
2. Promote healthy living and well-being through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.
3. Promote healthy living and well-being through receipt of effective clinical preventive services across the lifespan in clinical and community settings.

Next Steps

As described in the 2011 strategy, the National Quality Strategy is an adaptable and evolving guide to improve health, improve quality of care and lower costs for all Americans. As its implementation proceeds, the National Quality Strategy will be periodically refined, based on lessons learned in the public and private sectors, emerging best practices, new research findings, and the changing needs of the Nation. Annual reports to Congress and the American people will include updates on the National Quality Strategy and the Nation's progress in meeting the three aims of better care, healthy people/healthy communities, and making quality care more affordable and the progress on the six priorities.

In particular, the next version of the National Quality Strategy will include aspirational targets for a greater number of the key measures identified in this year's report that will serve as markers of progress for the six priority areas. In addition, further partnership between the public and private sectors will be convened over the next year to develop and validate additional measures in areas where the National Priorities Partnership found current efforts to be lacking, such as care coordination and affordable care.

As mentioned previously in this report, the National Priorities Partnership's input to the Secretary on priorities for the National Quality Strategy included three categories of strategic opportunities for driving improvement across all dimensions of the National Quality Strategy, namely: 1) A national strategy for data collection, measurement, and reporting; 2) Development of organizational infrastructure at the community level that assumes responsibility for improvement efforts; and 3) Ongoing payment and delivery system reforms. The National Quality Strategy will be a catalyst for action in each of these three areas by engaging stakeholders to identify next steps for progress.

Appendix A: Key Measures for National Quality Strategy Priorities

The following table summarizes the measure focus; measure name/description; baseline rate; aspirational target; population; and reporting source for the key measures identified for each National Quality Strategy priority.

NATIONAL QUALITY STRATEGY PRIORITY	MEASURE FOCUS	MEASURE NAME/DESCRIPTION	BASELINE RATE	ASPIRATIONAL TARGET	POPULATION	REPORTED BY (PATIENT/PROVIDER)
1. Making Care Safer by Reducing the Harm Caused in the Delivery of Care	Hospital-acquired Conditions	Incidence of measurable hospital-acquired conditions	145 HACs per 1,000 admissions[13]	Reduce preventable HACs by 40% by the end of 2013	All patient admissions	Providers
	Hospital Readmissions	All-payer 30-day readmission rate	14.4%, based on 32.9 million admissions[1]	Reduce all readmissions by 20% by the end of 2013	All patient admissions	Providers
2. Ensuring That Each Person and Family Is Engaged in Their Care	Timely Care	Adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted	14.1%[14]		Adult population	Adult population
	Decision-making	People with a usual source of care whose health care providers sometimes or never discuss decisions with them	15.4%[2]		Adult population	Adult population
3. Promoting Effective Communication and Coordination of Care	Patient-Centered Medical Home	Percentage of children needing care coordination who receive effective care coordination	69%[15]		Children	Children

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[13] Source: Agency for Healthcare Research and Quality and Centers for Medicare and Medicaid Services, preliminary findings regarding 2010 baseline data; February 2012.

[14] Source: Agency for Healthcare Research and Quality, Center for Financing, Access, and Cost Trends, Medical Expenditure Panel Survey, 2009.

[15] Source: Health Resources and Services Administration, Maternal and Child Health Bureau; Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children's Health, 2007.

NATIONAL QUALITY STRATEGY PRIORITY	MEASURE FOCUS	MEASURE NAME/DESCRIPTION	BASELINE RATE	ASPIRATIONAL TARGET	POPULATION	REPORTED BY (PATIENT/PROVIDER)
	3-item Care Transition Measure	• During this hospital stay, staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left • When I left the hospital, I had a good understanding of the things I was responsible for in managing my health • When I left the hospital, I clearly understood the purpose for taking each of my medications	Data available October 2012[16]		All admitted patients	Patients
4. Promoting the Most Effective Prevention and Treatment Practices for the Leading Causes of Mortality, Starting with Cardiovascular Disease	Aspirin Use	People at increased risk of cardiovascular disease who are taking aspirin	47%[17]	65% by 2017	General population	General population
	Blood Pressure Control	People with hypertension who have adequately controlled blood pressure	46%[18]	65% by 2017	General population	General population
	Cholesterol Management	People with high cholesterol who have adequately managed hyperlipidemia	33%[7]	65% by 2017	Provider visits	Providers
	Smoking Cessation	People trying to quit smoking who get help	23%[19]	65% by 2017	Provider visits	Providers

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[16] This report will be updated online to reflect baseline performance data from the Centers for Medicare and Medicaid Services in October 2012.

[17] Source: Centers for Disease Control and Prevention, National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), 2007-2008

[18] Source: Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES), 2005-2008.

[19] Source: NAMCS, 2005-2008.

INPUT TO THE SECRETARY OF HEALTH AND HUMAN SERVICES ON

PRIORITIES FOR THE NATIONAL QUALITY STRATEGY

NATIONAL PRIORITIES PARTNERSHIP

Convened by the National Quality Forum

NATIONAL PRIORITIES PARTNERSHIP ORGANIZATIONS

AARP
AFL-CIO
Agency for Healthcare Research and Quality*
Aligning Forces for Quality
Alliance for Home Health Quality and Innovation
Alliance for Pediatric Quality
America's Health Insurance Plans
American Board of Medical Specialties
American Health Care Association
American Medical Association
American Medical Informatics Association
American Nurses Association
AQA
Association of State and Territorial Health Officials
Certification Commission for Health Information Technology
Centers for Disease Control and Prevention*
Centers for Medicare & Medicaid Services*
Consumers Union
Health Information & Management Systems Society
Health Resources and Services Administration*
Hospice and Palliative Care Coalition
Hospital Quality Alliance
Institute for Healthcare Improvement
Institute of Medicine
Johnson & Johnson Health Care Systems
The Joint Commission
Leapfrog Group
National Association of Community Health Centers
National Association of Medicaid Directors
National Business Group on Health
National Committee for Quality Assurance
National Governors Association
National Hispanic Medical Association
National Initiative for Children's Healthcare Quality
National Institutes of Health*
National Partnership for Women & Families
National Quality Forum
Network for Regional Healthcare Improvement
Nursing Alliance for Quality Care
Pacific Business Group on Health
Partnership for Prevention
Patient Centered Primary Care Collaborative
Pharmacy Quality Alliance
Physician Consortium for Performance Improvement
Planetree
Quality Alliance Steering Committee
U.S. Chamber of Commerce
Veterans Health Administration*

**Ex-officio, non-voting*

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EXECUTIVE SUMMARY

In 2010, the Affordable Care Act (ACA) charged the Department of Health and Human Services (HHS) with developing a National Quality Strategy (NQS) to better meet the promise of providing all Americans with access to healthcare that is safe, effective, and affordable. Legislation required the NQS be shaped by input from stakeholders wielding collective national influence to ensure a nationally achievable, impact-oriented strategy. As a result, The National Quality Forum (NQF) convened the multistakeholder National Priorities Partnership (NPP), a partnership of 48 public- and private-sector partners, to provide collective input to HHS for consideration as it developed this national body of work.

The Secretary of HHS released the NQS in March 2011, strongly inclusive of NPP's input. Upon its release, NQS authors noted the need for further refinement—specifically around goals, measures, and public- and-private sector paths to implementation and improvement; subsequently HHS again requested input from NPP to help make the NQS more actionable and measurable. This report is in response to HHS's request for input on specific goals and measures for each of the six NQS priorities and highest-value strategic opportunities that can accelerate achievement of the three NQS aims of better care, affordable care, and healthy people and communities.

The term "alignment" is prevalent in this report. Stated plainly, enormous opportunity exists to make things simpler, more efficient, and less expensive. There are several major and specific opportunities for greater alignment that will help make significant gains in health, healthcare, and affordability:

- We all can focus on the same set of priorities and goals laid out in the NQS. No one can fix everything at once, and the imperative exists now for the public and private sectors to row in the same direction, at the same time, for shared and important gains in improving health, healthcare, and affordability in the United States—while still preserving the necessary flexibility on approach to meeting those aims.
- We can recognize that the key to health and well-being begins long before an individual enters the healthcare system and identify ways to collaborate within communities to accelerate progress on healthy behaviors and social determinants as contributors to health.
- We all can use the same data platforms, measures, and public reporting of performance. The current environment of measuring and reporting creates and proliferates use of multiple systems, measures, forms, and reports that create undue burden on providers, confusion to consumers, and cost to the nation.
- We can send unified signals to the market about incentives and rewards. Doing so would create a clear sense of direction and eliminate the confusion that currently creates expensive and often burdensome activity but not necessarily greater value or improvement.
- We can take great strides now to find places where both the public and private sectors can make gains individually and in partnership, and along the way, remove fragmentation and complexity that unnecessarily impair the effectiveness and safety of our healthcare and impede our ability to improve health.

Strategic Opportunities for Accelerating Improvement

There are three categories of strategic opportunities critical for making progress toward achieving the three NQS aims. These may serve not only as a catalyst for HHS, but also as a call to all stakeholders to identify opportunities for action and alignment, engage others to advance the priorities and goals, and accelerate change. These opportunities will require action at many levels and strong public-private partnerships to encourage adoption of shared goals, engender shared accountability, and promote ongoing multistakeholder collaboration. As an immediate next step, the strategic opportunities will need detailed pathways identifying practical steps for implementation to achieve better health and a more accountable, high-value healthcare system.

1. There must be a national strategy for data collection, measurement, and reporting that supports performance measurement and improvement efforts of public- and private-sector stakeholders at the national and community level.

Alignment and support of national, state, and community improvement efforts requires a solid infrastructure for collecting data and for analyzing and reporting performance. This infrastructure should include three components:

- ensuring a common data platform in every community that includes the necessary person-level data (covering all-payers and the uninsured) to calculate core sets of measures along with community-level data on population health and social determinants of health;
- identifying core sets of standardized performance measures applicable to each of the national priorities and goals; and

- implementing robust reporting programs that allow communities, states, and the nation to gauge progress in meeting the NQS priorities and goals.

The absence of these components seriously hampers efforts to achieve the NQS, to gauge progress, and to establish systems of accountability. Continued proliferation of program- and payer-specific data collection and measurement efforts, although well-intentioned, will continue to contribute to a source of significant administrative burden and lead to confusion and frustration at the provider level. A strategic plan, roadmap, and timeline for establishing this national and community-level infrastructure should be accelerated to allow for rapid implementation over the next five years.

It is critical that all federal programs drive toward the establishment of a common platform for measuring and reporting and make full use of this platform once established. As an example, a measurement pathway would lay out steps to move from measures calculated with all-payer, administrative data to those using clinical registries and electronic health records (EHRs); more sophisticated measures would require patient-reported data followed by the use of health information exchanges to support longitudinal measurement of care coordination and patient-reported outcomes. Public- and private-sector initiatives and programs focused on healthcare quality should incorporate the NQS core measures as part of their reporting mechanism and program evaluation for further harmonization.

2. There must be an infrastructure at the community level that assumes responsibility for improvement efforts, resources for communities to benchmark and compare performance, and mechanisms to identify, share, and evaluate progress.

The national imperative to improve the health of populations requires significant investment in infrastructure at the community level to address social determinants—a key factor in improving health—and to sponsor multisector efforts to create healthier communities. Toward this end, communities will need assistance in:

- establishing public-private, multistakeholder partnerships to provide leadership and assume responsibility for achieving the NQS priorities and goals; and
- identifying a compendium of intervention strategies, models, and best practices for each of the six NQS priority areas to allow community leaders to benchmark, share, and learn from each other.

Recognizing that communities vary in their states of readiness, the priorities and goals presented in this report offer a menu of options that should resonate regardless of where they fall on the implementation spectrum. Regardless of their level of experience, communities should receive support to identify priority areas, implement programs, and assess and report on progress to achieve success; the federal government can provide leadership to ensure that these resources are available to communities to identify priority areas and develop individualized strategies for improving quality at the local level.

3. There must be ongoing payment and delivery system reform—emphasizing primary care—that rewards value over volume; promotes patient-centered outcomes, efficiency, and appropriate care; and seeks to improve quality while reducing or eliminating waste from the system.

Changing incentives and improving care delivery models are critical to improving health and healthcare and to encouraging the development of a system that supports affordable, high-quality care. Strategic opportunities in this area include:

- rapidly designing and implementing new payment programs and care delivery models emphasizing shared learning and public and private stakeholder collaboration;
- addressing underlying cost drivers that affect payment and delivery models;
- ensuring transparency to promote informed decision making as an integral component of all payment and delivery models; and
- addressing underlying workforce and technology constraints that impede progress.

Healthcare has entered a period of extraordinary innovation, with public and private purchasers and health plans working to identify payment programs that reward value and encourage integrated and coordinated delivery models. Public- and private-sector stakeholders should establish a mechanism to build and share evidence of approaches that work best, identify core sets of measures on patient outcomes and cost to be used across all payment and delivery programs, and encourage the adoption and alignment of payment programs around a common measurement strategy.

Importantly, targeted payment reforms are critical to addressing underlying cost drivers, including overuse and inappropriate care. Efforts should be made to further develop the evidence base on these drivers and identify specific strategies to target areas of high-cost, high-variation care.

Consumers, purchasers, health plans, and others must have the necessary quality and cost data to select from a variety of providers and services. Ensuring transparency of these data is critical to making well-informed decisions. As accountable care organizations and other integrated structures become more widespread, monitoring the data for unintended consequences such as market concentration and cost shifting will become increasingly important to determine whether payment and delivery models are achieving their goals or exacerbating existing problems.

Proposed Goals and Measures

HHS requested specific goals and accompanying measures for each of the six NQS priority areas. The measures are at the population/national level and set the stage for a cascade of subsequent measures (including those at the provider and clinician level) that establish accountability for all who can make progress against the NQS. This report proposes goals that are broad in nature but can be put into operation through specific measurement strategies. Many of the illustrative measures already are reported at the national level through various reporting programs; but where gaps exist, the report suggests measures that might be developed or adapted for use at the national level.

Summary of NPP's Proposed Goals and Measure Concepts

National Priority: Work with communities to promote wide use of best practices to enable healthy living and well-being.

GOALS	Measure Concepts
Promote healthy living and well-being through community interventions that result in improvement of social, economic, and environmental factors.	• Adequate social support • Emergency department visits for injuries • Healthy behavior index • Binge drinking • Obesity • Mental health • Dental caries and untreated dental decay • Use of the oral health system • Immunizations
Promote healthy living and well-being through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.	
Promote healthy living and well-being through receipt of effective clinical preventive services across the lifespan in clinical and community settings.	

National Priority: Promote the most effective prevention, treatment, and intervention practices for the leading causes of mortality, starting with cardiovascular disease.

GOALS	Measure Concepts
Promote cardiovascular health through community interventions that result in improvement of social, economic, and environmental factors.	• Access to healthy foods • Access to recreational facilities • Use of tobacco products by adults and adolescents • Consumption of calories from fats and sugars • Control of high blood pressure • Control of high cholesterol
Promote cardiovascular health through interventions that result in adoption of the most important healthy lifestyle behaviors across the lifespan.	
Promote cardiovascular health through receipt of effective clinical preventive services across the lifespan in clinical and community settings.	

National Priority: Ensure person- and family-centered care.

GOALS	Measure Concepts
Improve patient, family, and caregiver experience of care related to quality, safety, and access across settings.	• Patient and family experience of quality, safety, and access • Patient and family involvement in decisions about healthcare • Joint development of treatment goals and longitudinal plans of care • Confidence in managing chronic conditions • Easy-to-understand instructions to manage conditions
In partnership with patients, families, and caregivers—and using a shared decision-making process—develop culturally sensitive and understandable care plans.	
Enable patients and their families and caregivers to navigate, coordinate, and manage their care appropriately and effectively.	

National Priority: Make care safer.

GOALS	Measure Concepts
Reduce preventable hospital admissions and readmissions.	• Hospital admissions for ambulatory-sensitive conditions • All-cause hospital readmission index • All-cause healthcare-associated conditions • Individual healthcare-associated conditions • Inappropriate medication use and polypharmacy • Inappropriate maternity care • Unnecessary imaging
Reduce the incidence of adverse healthcare-associated conditions.	
Reduce harm from inappropriate or unnecessary care.	

Summary of NPP's Proposed Goals and Measure Concepts *(continued)*

National Priority: Promote effective communication and care coordination.

GOALS	Measure Concepts
Improve the quality of care transitions and communications across care settings.	• Experience of care transitions • Complete transition records • Chronic disease control • Care consistent with end-of-life wishes • Experience of bereaved family members • Care for vulnerable populations • Community health outcomes • Shared information and accountability for effective care coordination
Improve the quality of life for patients with chronic illness and disability by following a current care plan that anticipates and addresses pain and symptom management, psychosocial needs, and functional status.	
Establish shared accountability and integration of communities and healthcare systems to improve quality of care and reduce health disparities.	

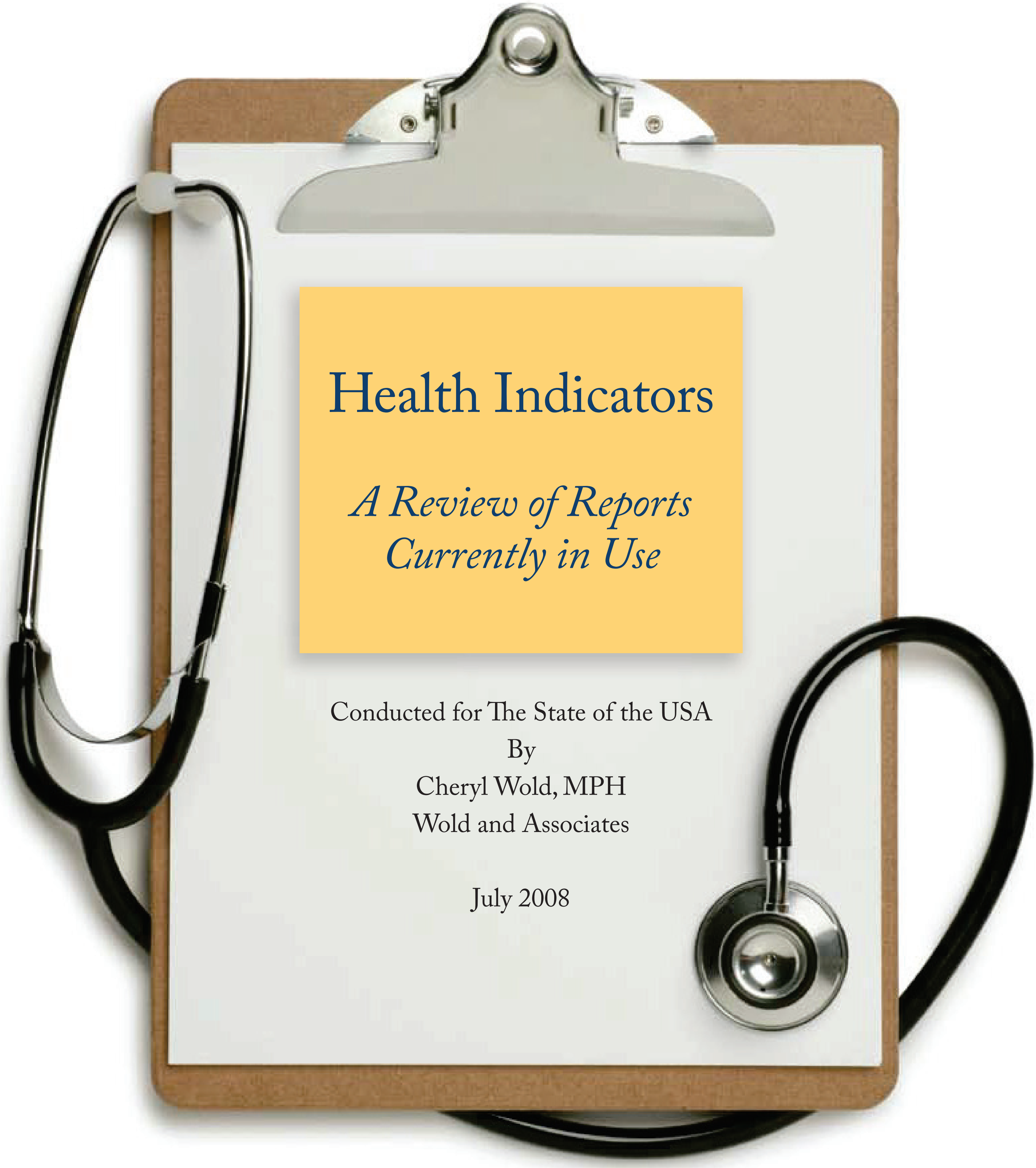
National Priority: Make quality care affordable for people, families, employers, and governments

GOALS	Measure Concepts
Ensure affordable and accessible high-quality healthcare for people, families, employers, and governments.	• Consumer affordability index • Consistent insurance coverage • Inability to obtain needed care • National/state/local per capita healthcare expenditures • Average annual percentage growth in healthcare expenditures • Menu of measures of unwarranted variation of overuse, including: - Unwarranted diagnostic/medical/surgical procedures - Inappropriate/unwanted nonpalliative services at end of life - Cesarean section among low-risk women - Preventable emergency department visits and hospitalizations
Reduce total national healthcare costs per capita by 5 percent and limit the increase in healthcare costs to no more than 1 percent above the consumer price index without compromising quality or access.	
Support and enable communities to ensure accessible, high-quality care while reducing unnecessary costs.	

By developing the NQS, HHS has laid a foundation for a shared accountability and action that can be accomplished only through robust, multistakeholder public-private partnerships that align, focus, and coordinate efforts and resources. The federal government itself has an enormous opportunity to examine its own efforts closely to support a unified data platform, core measure sets, active public reporting on priorities and goals, and incentives to fully unleash its power as a catalyst for change.

The National Priorities Partnership thanks HHS for the opportunity to provide input on further refinements to the NQS goals and measures and to suggest strategic opportunities that will accelerate achievement of national priorities to improve health and healthcare. With healthcare reform under way, the existence of shared goals will lead us in the right direction. Now is the time to accelerate the development of infrastructure and tools, the allocation of resources, and the dedication of our collective energy to achieve these goals.

Current State of Measurement



Health Indicators

A Review of Reports Currently in Use

Conducted for The State of the USA
By
Cheryl Wold, MPH
Wold and Associates

July 2008

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3.0 Overview of Reports

3.1 Approaches

The sample, based on different conceptual approaches, resulted in a comprehensive set of associated indicators. Table 1 summarizes each indicator report including its compiling organization, focus areas, and key features. Table 1 is organized into four groups of reports.

National General Health Reports

The first group includes general population health indicator reports produced at a national level. These include *Community Health Status Indicators* (produced by the U.S. Centers for Disease Control and Prevention and reviewed in its current draft form), *America's Health Rankings* (produced by United Health Foundation, American Public Health Association and the Partnership for Prevention), *Healthy People 2010* Leading Indicators (produced by the National Academy in conjunction with the U.S. Department of Health and Human Services), and the Commission on a Healthier America (report titled *What Drives Health?*), a joint public and private effort (sponsored by the Robert Wood Johnson Foundation).

Although the focus varies somewhat, these four reports feature indicators consistent with a broad health determinants approach. The *Community Health Status Indicators* include the most comprehensive set of health indicators, and has been designed to provide data for local areas (counties) throughout the U.S. These reports share similar emphases on major health outcomes influenced by the major health determinants. Indicators include those for behaviors, such as smoking, physical activity, and alcohol and drug abuse, chronic health conditions, such as obesity and diabetes, injuries, and other outcomes such as mortality, health related quality of life, and health function. All with one exception include access to health care and appropriate use of clinically effective services, such as cancer screening, prenatal care. The degree that social determinants are emphasized in the health indicator reports varies. The Robert Wood Johnson Foundation's Commission for a Healthier America has compiled a set of 13 indicators based upon 6 social factors and three key health conditions (early childhood, obesity, and diabetes) impacted by these social factors, which include, for example, income/poverty and educational attainment. In addition, indicators related physical environmental health determinants are limited (examples of such indicators are provided later in this report). Specific indicators are shown in detail in Section 3.2.

The next three reports in this group focus on the general well-being of specific population groups, namely children and families and older Americans. *America's Children* and *Older Americans* are both produced by Federal Interagency Forums—one on Child and Family Statistics and the other on Aging-Related Statistics. *Kid's Count* (produced by the Annie E. Casey Foundation) focuses on the well-being of children and youth.

The child health indicators primarily reflect a combination of broad determinants and life course approaches. For children, measures of health and development are intertwined with safety, economic security, social and emotional well-being, and educational and developmental opportunities—all factors that optimize healthy development as well as influence short- and long-term health outcomes.

The Older Americans report constructs a "broad picture of well-being" in the later life stages—those starting at age 65 years and beyond. Indicators of health are reflective of a wider dimension of health outcomes, as compared to general health reports, reflective of the health experience of older persons, including the manifestations of normal aging as well as reduced health due to chronic conditions, physical and psychological impairments, and increased need for health care and supportive services. Health problems, ability to function independently, sensory impairments, and use of prescription medication and equipment, out-of-pocket medical costs, long term care, and health literacy, are examples.

State and Local Health Reports

General health reports from state and local health departments complement the first group of national reports with other approaches. Seattle-King County's *Communities Count* and Los Angeles County's *Key Health Indicators* each provide examples of the use of social indicators in health reports. Specifically, Seattle tracks societal resources for health (e.g., living wage, affordable housing and homelessness, social cohesion), and both include health indicators of family and community environments during in early childhood (e.g., child care needs and experience, parenting practices). Both of these indicator sets benefit from local surveys for their breadth.

Reports from the State of Georgia and New York City provide examples of indicators focused on health inequities or disparities. Variations in health determinants and health outcomes by income or geographic jurisdiction (i.e., counties, neighborhoods), and race or ethnic background are shown. *The Health of Wisconsin* grades health and disparities using few indicators per age group. The report is organized by life stage and uses grades to communicate how the state is doing as compared to selected states and among its own demographic sub-groups.

A local health report, *The Boston Paradox: Lots of health care; not enough health*, provides some contextual data that is unique to local health reports, and describes the health care economy and the juxtaposition of quality of life and better and more equitably distributed health, relative to costs and spending on health care.

Quality of Life—Comprehensive Indicator Systems

Several examples of comprehensive indicator systems, from around the world and within the U.S. are based upon a *quality of life* approach. These were important to include as they directly relate to the evolution of the State of the USA model, which was informed by many comprehensive indictor systems that were the subject of a national indicators forum (GAO 2004). Health is usually one of a dozen or so components of overall societal well-being. For example, the Organization for Economic Cooperation and Development in its *Factbook: 2008 Economic, Environmental and Social Statistics* includes eleven categories (as shown in Section 5.0, Figure 7). Health is included under "Quality of Life" and includes just three indicators: life expectancy, infant mortality, and obesity. Another system, *Measures of Australia's Progress* (MAP), outlines several dimensions of progress that are framed for "individuals" (includes health, education and training, work), "the economy and economic resources", "the environment", and "living together" (see Section 5.0, Figure 8). The MAP areas are similar to OECD's cross-cutting categories (economic, environmental, social). In the Australian example, the indicator for health is life expectancy. *The Canadian Index of Well-being* is currently developing a similar comprehensive indicator system for the nation which includes eight categories (shown in Section 5.0, Figure 9), although constructs of each are not available.

The comprehensive systems vary greatly, but are generally used to promote civic engagement and problem solving on the part of communities, and responsiveness and accountability on the part of agencies and public leaders. Similar to the national indicator systems, health is one among several components contributing to the overall quality of life in these regions. Several of these systems were the subject of a forum and subsequent GAO review (GAO 2003; GAO 2004) and contributed to the evolution of the State of the USA. Examples of such systems include the Boston Indicators Project and the Jacksonville County Community Indicators.

Health System Performance Reports

This next section of reports includes indicators for the following broad dimensions of health system performance: access, cost of health care, and quality.

There are two transitional points worth noting here. First, is that *access to health care* is both a feature of general health reports as well as a key dimension of health system performance. Nearly all of the general health reports include indicators regarding health insurance coverage, and several include measures of related to having a usual source of care or "medical home". Many include indicators related to barriers to getting needed care (e.g., cost of care or other barriers such as waiting times). However, they rarely include measures related to fiscal and economic, structural, quality, and safety aspects of the health care system.

The State Scorecard on Health System Performance produced by The Commonwealth Fund uses indicators that are similar to those just described, and also creates a bridge between general health and health system performance reports. This report is focused on equity in access, quality, avoidable use of hospitals and costs of care, and mortality amenable to health care.

Another report plays a bridging role. The Older Americans, although included above with general health reports, links to the health system performance indicator reports for at least two reasons. The first is because the majority of those receiving health care services in the U.S. are older adults, and the majority of health care use by individuals occurs during the last two years of life. This report diverges from some of the standard health reports used in general to include indicators of long term care, sensory impairments, depressive symptoms, out-of-pocket health care expenditures, veterans' health care, personal assistance and equipment, and need for/use of residential services.

Indicator sets that track *costs and opportunities to reduce health care spending* include those from the Kaiser Family Foundation (KKF), *The Dartmouth Atlas of Health Care*, the Organization for Economic Cooperation and Development's (OECD) *Health Care Quality Indicators*, and *Health Care Costs 101* from the California HealthCare Foundation. These reports provide examples of indicators that quantify key measures and variations in health care expenditures, costs, intensity of health care resource use, and identify where spending could feasibly be reduced and greater efficiencies realized. The most recent release of *The Dartmouth Atlas of Health Care* is focused on the treatment of chronic conditions in the last two years of life, and includes indicators that reflect the intensity of health care resources use and explore unwarranted variations and costs between hospitals and types of services.

It is also important to consider indicators of cost from the perspective of consumers and businesses, as reflective of public concern. For example, among KFF's many indicators are those that speak to the increasing burden of health care costs on individuals and families due to increasing out-of-pocket costs, rising insurance premiums—also a burden for employers—and avoidance of needed care by millions due to cost, and among those without health care coverage.

The last broad dimension for indicators of health system performance is *quality*. One of the most extensive bodies of indicators work regarding health system quality comes from the Agency for Healthcare Research and Quality (AHRQ). Two reports produced by AHRQ are the *National Healthcare Quality Report* and the *National Healthcare Disparities Report*. Together, these reports provide one of the most comprehensive set of health systems measures related to quality. Both follow the six conceptual areas outlined by the IOM (Figure 4; IOM, 2001), although also acknowledge that indicators are not uniformly available for all of these dimensions. The first of these reports provides a set of 41 core measures of health care quality: use and delivery of effective care (screening, treatment, disease management), timely care, and patient centeredness. The *National Healthcare Disparities Report* adds indicators of access because disparities in quality are driven, in part, by differential access by race/ethnicity and income. The OECD also developed indicators based upon extensive review by participating countries for the purpose of facilitating international comparisons in health care quality. While fewer in number, these indicators are similar to AHRQ's.

3.1 Approaches

The Dartmouth Atlas uses domestic comparisons and benchmarking to show unwarranted variations—variation in clinical practice or spending that cannot be explained on the basis of illness, strong scientific evidence, or well-informed patient preferences—in spending and resource use. These variations contribute to poorer outcomes and quality (e.g., use of clinically effective care, patient experience) as well as inefficiency in health care.

The Institute for Healthcare Improvement (IHI), also a private sector leader in health care quality, is monitoring efforts to improve patient safety and reduce incidents of harm, in the context of its quality work. The "Five Million Lives" Campaign is a comprehensive health system reform initiative with goals to involve over 4,000 hospitals and prevent five million people from incidents of medical harm. Indicators are aligned with those from all of the major national health care improvement initiatives (see Exhibit 4.4.6; Five Million Campaign, 2007). Another example of a patient safety indicator set is provided by HealthGrades, which has produced a report card based on a composite index using the Agency for Healthcare Research and Quality's Patient Safety Indicators (PSIs). Individual hospitals are ranked along with state on measures of patient safety.

Indicators addressing health system quality in terms of patient-centered care from the patient's perspective are included in consumer-oriented sites such as Hospital Compare and Nursing Home compare, compiled by the Centers for Medicare and Medicaid Services. Many of these same indicators are drawn from surveys, such as the Consumer Assessments of Healthcare Providers and Systems (CAHPS), which also used by the Agency for Healthcare Research and Quality (AHRQ) in quality monitoring efforts.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
GENERAL HEALTH REPORTS—NATIONAL			
1. America's Health Rankings	United Health Foundation, American Public Health Association, and the Partnership for Prevention	Determinants of health and outcomes: personal behaviors, community environment, public health and health policies, and clinical care. (20 indicators)	• Collaborative private effort – supported by prominent health organizations. • State rankings and state data. • Statistical and contextual data of high-quality (i.e., validated through peer review.)
2. Community Health Status Indicators (draft form)	CDC, NCHS, and other public partners.	Summary measures of health, national leading causes of death, measures of birth and death, relative health importance, vulnerable populations, environmental health, preventable infectious disease, preventive services use, access to care, risk factors for premature death (~ 60 indicators and ~200 measures)	• Indicators for 3,140 U.S. counties. • Comparative data (peer counties, Healthy People 2010) • Interpretive tools to facilitate broad use (e.g., rankings for relative health importance) and downloadable maps and brochures.
3. Healthy People 2010 Leading (max. set)	NCHS with federal, private partners.	Overall focus of objectives is to increase the quality of life and longevity, and reduce health disparities. Leading indicators corresponding to 26 objectives + cross cutting objectives.	• Objectives for health improvement in the U.S. (over 400). • Well regarded and broadly used. • Developed using consensus. • Indicators are suggested measures and are not always tracked uniformly.
4. Commission to Build a Healthier America—What Drives Health?	Robert Wood Johnson Foundation	Focus is on eight social factors: early life experience, education, income, work, housing, community, race and ethnicity, and the economy. Three health conditions: obesity, chronic disease, and early childhood.	• Emphasizes underlying causes of poor health and disparities. • Emphasizes social factors and community environments.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
GENERAL HEALTH—NATIONAL WITH FOCUS ON SPECIFIC AGE GROUPS (CHILDREN AND ELDERS)			
5. America's Children	Interagency Forum on Child and Family Statistics (over 40 federal departments, agencies and offices).	Seven sections that cover family and social environment (8), economic circumstances (3), health care (4), physical environment and safety (7), behavior (5), education (6), and health (6).	• Collaborative federal effort – broad agency support. • Broad approach – health and well being of children and youth in U.S. • Identifies data gaps
6. Kids Count	Annie E. Casey Foundation	Focus: Conditions of birth through young adulthood. Broad determinants.	• Data center that links with state and county-based data, where available. • User-friendly query system.
7. Older Americans 2008: Key Indicators of Well-Being	Interagency Forum on Aging-Related Statistics	Five focus areas (38 indicators total) including population (6), economics (7), health status (7), health risks and behaviors (8), health care (10).	The report also contains two additional focus areas on literacy and health literacy, and identifies data gaps.
GENERAL HEALTH—LOCAL AND STATE			
8. Communities Count (Seattle King County, Washington)	Seattle/King County Public Health with public and private partners	A set of 38 social, health, environmental and arts indicators: Basic Needs and Social Well-being (7), Positive Development through Life Stages (8), Safety and Health (19), Community Strength (4), Natural and Built Environment (5), and Arts and Culture (4).	• Indicators are framed by "valued conditions" as expressed by community residents through a periodic survey. • Breadth of social and health determinants. • Linked to community process/ civic agenda.
9. Georgia Health Disparities Report	State of Georgia Public Health	Social and economic well-being; Health status (disease, premature death); Quality and access to care; Health professional workforce.	• County profiles with grades (and criteria) and ranking/comparisons to other counties in the state.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
GENERAL HEALTH—LOCAL AND STATE (continued)			
10. Los Angeles County Key Health Indicators	Los Angeles County Public Health	Broad determinants of health: social and environmental determinants, behaviors, health status and outcomes.	• Rich local data on social and environmental determinants especially related to early childhood, chronic disease prevention. • Indicators supported by large local survey. • Static report and limited on-line query system.
11. New York City Community Health Profiles	NYC Department of Health and Mental Hygiene	Comprehensive health report cards for New York's 42 neighborhoods. On line has quick maps and statistics for 42 boroughs on ten indicators.	• Indicators supported by large local survey. • On-line query system. • Related static reports. • Interesting organization of large amount (Ten "Take Care New York Goals")
12. New York City Health Disparities Report	NYC Department of Health and Mental Hygiene	Health disparities based on social inequities. Features grouped neighborhood comparisons of health outcomes (e.g., premature mortality, morbidity).	• Poor/affluent neighborhood comparisons. • Geographic, racial/ethnic (including some immigrant groups), gender disparities
13.Health of Wisconsin Report Card 2007	University of Wisconsin Population Health Institute	Focus is mortality and health-related quality of life in different life stages: Infants (<1 year); children and young adults (ages 1-24 years); working aged adults (25-64 years); and, older adults (age 65 +).	• Grades are assigned for each age group by gender, educational attainment, type of county, and race/ethnicity, and for disparities. • Clear criteria for grading.
14. The Boston Paradox: Lots of healthcare; not enough health	New England Research Institute	Focus on broad health determinants	• Includes indicators related to the health care economy and investments in public health and research.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
QUALITY OF LIFE (COMPREHENSIVE INDICATOR SYSTEMS)			
15. OECD Factbook 2008: Economic, Environmental and Social Statistics	Organization for Economic Cooperation and Development	Quality of life framework includes health, leisure, society, transport.	• Indicators suitable for international comparison among 23 countries currently.
16. Boston Indicators Project	The Boston Foundation; The John LaWare Leadership Forum; The City of Boston; Boston Redevelopment Authority; Metropolitan Area Planning Council	Quality of life (10 sectors): civic vitality, cultural life and the arts, the economy, education, the environment, health, housing, public safety, technology, and transportation. Health framework: indicators organized around eight goals (20 indicator areas, and approximately 40 individual measures).	• Comprehensive indicator system. • Public-private effort that supports civic agenda. • Data paired with information about policies and other government and private initiatives.
17. Jacksonville Indicators for Progress—JCCI 2007 Quality of Life Report	Jacksonville County Community Indicators	Quality of life, progress (9 areas): education, economy, natural environment, social environment, arts and culture, health, government, transportation, and public safety. (100+ indicators)	• Well regarded comprehensive local indicator report. • Broad participation (i.e., businesses, community members, non-profit and governmental agencies). • Community perceptions survey.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
QUALITY OF LIFE (COMPREHENSIVE INDICATOR SYSTEMS) (continued)			
18. Australia's Measures of Progress	Australia Bureau of Statistics	Framework: individuals, economy and economic resources, the environment, and living together.	"Headline" dimensions of progress: Health, education, training, national income, economic hardship, national wealth, housing, productivity, the natural landscape, the air and atmosphere, oceans and estuaries, family, community, and social cohesion, crime, democracy, governance and citizenship. Supplementary dimensions: culture and leisure, competitiveness and openness, inflation, communication, and transport.
19. Canadian Index of Well-being (Prototype)	Atkinson Foundation (broad collaborative effort)	Focus areas: healthy populations, community vitality, time use, educated populace, ecosystem health, arts and culture, civic engagement, living standards.	• National comprehensive indicator system with parallels to SUSA. • Composite index will be created from focus areas.
HEALTH SYSTEM PERFORMANCE			
20. Commonwealth Fund State Scorecard on Health System Performance	Private researchers Commissioned by Commonweath Fund in collaboration with Commission for Health System Performance Improvement.	Focus areas (number of indicators): access (4), quality (14), potentially avoidable use of hospitals and costs of care (9), equity, healthy lives (5)	• Improvement and equity focus. • Several measures comparable to developed countries (i.e., OECD)

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
21. Dartmouth Atlas of Health Care	Dartmouth Institute for Health Policy and Clinical Practice, Dartmouth Medical School	Focus: Medicare spending, resource allocation and use, and patient outcomes at state, regional and hospital levels.	• Interactive data tools providing comprehensive statistics on health system performance. • Comparative statistics and benchmarks by hospital, hospital referral area, county, state, and nation. • Emphasis on Medicare beneficiaries with serious chronic illness and patients with severe chronic illnesses in their last two years of life.
22. National Healthcare Quality Report	Agency for Healthcare Quality and Research with the U.S. Department of Health and Human Services (HHS)	Focus is effectiveness, patient safety, timeliness, patient-centeredness, and efficiency of health care services. Dimension of efficiency is explored in the 2007 report.	• Uses highest quality data available, which is not yet uniformly available across all dimensions or service sectors. • 42 core measures • Effectiveness of prevention, diagnosis, treatment, management for nine clinical conditions/care settings. • State snapshots (online) compare quality trends for selected composite measures.
23. National Healthcare Disparities Report	Agency for Healthcare Quality and Research (same as above)	Focus is disparities in effectiveness, patient safety, timeliness, and patient-centeredness of health care services.	• Disparities by race/ethnicity, socio-economic status, and within/between other priority population. • 42 measures of quality and 8 measures of access
24. OECD Health Care Quality Index	Organization for Economic Cooperation and Development +	Health care quality improvement (13 measures).	• Indicators suitable for international comparison. • Health care system performance measures—comparable statistics on clinical quality of care and outcomes for 23 countries.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
HEALTH SYSTEM PERFORMANCE (continued)			
25. Five Million Lives	Institute for HealthCare Improvement	12 interventions in 4,000 U.S. hospitals to reduce incidents of patient harm by 5 million over a two year period.	• Large private campaign to transform health care system. • Possible indicators cut across to describe participation (adoption of actions by hospitals) and number of incidents of harm prevented.
26. Patient Safety in America Hospitals Study	HealthGrades	Patient Safety Report card for U.S. hospitals based upon AHRQ methodology (16 patient safety indicators).	• Composite safety score and ranking of all states. • Analysis of best performing hospitals/systems. • Trends in medical error and costs.
27. Hospital Compare	Centers for Medicare and Medicaid Services	Focus in four areas: process of care, outcomes of care, patient experiences with care, and Medicare payment and volume.	Comparisons to average of all U.S. hospitals and hospitals in state or region.
28. Trends and Indicators in the Changing Health Care Marketplace Chartbook	Kaiser Family Foundation	Focus on trends in health care spending and costs, including prescription drugs, health insurance enrollment, health insurance premiums, health insurance benefits, structure of the health care marketplace, health plan and provider relationships, and implications of health market, and trends for consumers and the safety net.	• Approximately 80 indicators. • Describes increasing costs and disparities in among the uninsured and by payer type. • On-line chart book; regularly updated.
29. World Health Organization	World Health Organization Information System	Focus of Ten Statistical Highlights: Risk Factors, National Health Accounts, Health Systems Focus of report: health status (mortality, morbidity), health services coverage, risk factors, health systems, inequities in health, demographic and socioeconomic statistics.	• Comparative statistics for 193 countries. • “Ten statistical highlights”

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
30. Health Care Costs 101	California HealthCare Foundation	Trends in health care spending (dollar amounts, growth, spending categories and payment sources, drivers of g) in the U.S. (selected data for California).	User-friendly snapshot of health care spending.
OTHER—FRAMING APPROACHES AND GAPS			
31. Trust for America's Health: Top 10 priorities for prevention (Framework example)	Trust for America's Health – A coalition of 130+ organizations.	Ten priorities: Promoting disease prevention; combating the obesity epidemic; preventing tobacco use and exposure; preventing and controlling infectious diseases; preparing for potential health emergencies and bioterrorism attacks; recognizing the relationship between health and U.S. economic competitiveness; safeguarding the nation's food supply; planning for changing health care needs of seniors; improving the health of low-income and minority communities; reducing environmental threats; plus a cross-cutting recommendation for holding government accountable for protecting the health of Americans.	• Ten components of an effective national prevention strategy provides framework for consideration.
32. Prevention Institute—Good Health Counts (Prototype)	The Prevention Institute (Commissioned and published by the California Endowment)	Framework: Environments (social and physical) that promote health and prevent health problems.	• Potential use for addressing gaps in indicators for healthy community conditions--physical and social environments that optimize health.

TABLE 1: REPORTS INCLUDED IN REVIEW: FOCUS AND KEY FEATURES (continued)

NAME OF REPORT	COMPILING ORGANIZATION	FOCUS (NUMBER OF INDICATORS)	KEY FEATURES
OTHER—FRAMING APPROACHES AND GAPS (continued)			
33.Environ–mental Public Health Indicators Project	U.S. Centers for Disease Control and Prevention, National Center for Environmental Health, Environmental Hazards and Health Effects Program	Physical environmental determinants of health.	• Topics: Based upon Healthy People 2010 and pathways or sources, agents, and events. • Type of indicators (hazard, exposure, health effect, and intervention) • Tiers of indicators (core, optional, and developmental). • Potential use for addressing gaps in physical environmental determinants.
34. Early Childhood Indicators—Project Thrive (Prototype)	National Center on Childhood Poverty	Focus of measures: overarching outcomes, population-based risks, health and medical home, special needs, social-emotional development and mental health, early care and education, family support and parenting.	• Comparisons of data available in major national indicator sets. • Potential use for addressing gaps in indicators for early childhood —social determinants and policy/systems interventions. • Uses results-based accountability approach.
35. Big Cities Health Inventory	National Association of City and County Health Officials	Focus of measures: trends and city rankings in health outcomes by gender, race/ethnicity.	• 54 largest cities in the U.S. • Health outcomes and status (mortality, birth data, and reportable diseases). • City socio-demographic data.

3.2 *Health Indicators and Data Sources*

This section describes indicators from selected reports, and highlights key data sources for those indicators. Tables 2 and 3 compare indicators from a sample of national general health indicator reports, and Table 4 shows several data sources used to create those indicators. Tables 5, 6 and 7 compare indicators of health system performance (access, cost, and quality, respectively) and Table 8 is the companion data source summary. This summary is illustrative, and points out some general similarities and differences among the various indicators as well as some of the data source capabilities. Indicators from each of the individual reports are provided in Section 4.1–4.5 of this report. Technical information from a sample of reports is provided in Appendix B.

General Health Indicators and Data Sources

Table 2 shows the areas of greatest similarity between the indicators used in general health indicator reports. Most use comparable measures related to birth and death. Indicators for life expectancy, premature mortality (measured in Years of Potential Life Lost or YPLLs), and health early in life (low birth weight, or adequacy of prenatal care, social characteristics of the family or mother such as age of educational attainment) are very robust, and are available from the National Vital Statistics System. These data benefit from completeness of reporting and support demographic sub-group and small geographic level analysis (e.g., to the county level).

Another commonly-used type of indicator measures health-related quality of life. Self-assessments of overall health status by individuals or their proxies (e.g., health-related quality of life assessed using a measure of poor health days or self-rated health status) are very reliable measures and have an extensive literature about their usefulness in capturing morbidity, early mortality, and use of health care services. Composite measures that capture multiple dimensions of health, such as healthy life expectancy, quality-adjusted life years, and disability-adjusted life years, are used in studies but less often in indicator reports at the present time. (See Agwunobi, 2006, and references provided in Appendix A.)

Typical indicators for health risks/behaviors include obesity, smoking, physical inactivity, and alcohol and drug abuse, lack of insurance coverage.

Social indicators and risks that are standard to most (if not all) reports include educational attainment or completion of high school, crime, violence, and poverty as important determinants of health. All reports include indicators for race/ ethnicity or emphasize disparities, although how this is presented varies depending on the focus of the report.

Table 3 illustrates how indicators used in various reports diverge in emphasis. For example, CHSI emphasizes outcomes—specific health conditions and disease, including health risks and protective factors. These indicators largely mirror the availability of national data at local (county) levels for health. Other reports, such as the Robert Wood Johnson Foundation report, emphasize social indicators, a number of which are available to support state and county-level analyses. Indicator reports that are focused on child and family well-being also emphasize social indicators and a range of experiences and exposures to children (e.g., parental educational attainment).

Examples of data sources for *Social and Environmental Determinants* are shown in Table 4. There are several high quality data sources that provide data for social, economic, educational and social indicators (e.g., household income, educational attainment, household and family size and composition, languages spoken, including English proficiency, and employment) from Census products. For example, in addition to the decennial Census, the American Community Survey now provides annual estimates for populations of 65,000 or greater. Estimates for smaller areas or sub-groups within regions may be obtained by combining years. The survey was designed to provide annual data to local areas and replaces the "long form" that was formerly conducted every ten years. Design and sampling features, for example, a 15% sample of the U.S. households and very high response rates, make this a very robust data source.

Another Census product, the Current Population Survey, also provides high-quality annual household data but reliable disaggregation is limited to the state level (and selected large sub-state areas). The CPS is an important source of data regarding children's health insurance coverage, income, and food security.

Examples of data sources for *Health Outcomes* are also shown in Table 4. Data for birth and death are available in any jurisdiction in the U.S. from the Vital Statistics Reporting System. The data are considered to be high-quality and accompanying demographic data support sub-group analysis.

Data sources for health outcomes throughout the life course (health behaviors, risks, status) are primarily from surveys and disease reporting systems, which vary in analytical potential. While all are respected data sources at the national level, each will have limitations for producing local estimates or conducting geographical and/or sub-group analyses. For example, the Behavioral Risk Factor Survey System (BRFSS; sample size approximately 350,000) is comprehensive and representative, and is able to support state and large MMSA analyses. Reliable estimates at the county level depend on population size, sample (denominator) and prevalence estimate (numerator). To illustrate this point, estimates of the number of counties reportable from aggregation of BRFSS surveys were tabulated for the CHSI project (available in methods documents for this source). The number of reportable U.S. counties ranges from 2,719 counties for diabetes, as compared to 687 counties for Pneumonia vaccine for persons ages 65 years and older. (See Community Health Status Indicators). National Health Interview Survey (NHIS) produces excellent national-level data. Its sampling frame is also used by other studies, such as the Medical Care Expenditure Panel's Household component. It also provides child-related health data through its substantial sample of children.

Several issues apply to the quality and representativeness of different surveys, which are beyond the scope of this review. There are many helpful resources for assessing the strengths and limitations of different survey methods and quality of data. For example, Fahimi, et al (2008) compares estimates from the BRFSS, NHIS and NHANES in light of declining telephone survey response rates. Additional references for reviewing data sources are provided in Appendix A for the committee's reference and consideration, depending on the indicators selected.

3.2 Health Indicators and Data Sources

There are many instances where an indicator may be considered important, but not be able to produce reliable state or local estimates. For example, if the committee selects childhood overweight as an indicator, it will be currently be limited to self-reported data (by a parent/legal guardian) from the National Survey of Children's Health (NSCH) or National Health Interview Survey (NHIS). Height/weight measures, provide more accurate data, but are available only from the National Health and Nutrition Examination Survey (NHANES), which pairs interview data with clinical exams. While a valid national sample, NHANES is limited to national estimates (although state estimates can be obtained by combining multiple years). The problem of indicators for childhood overweight may improve as other data sources become available, however. For example, the use of school-based testing has become a valuable source of surveillance for child overweight, and is becoming more common. In California, for example, height/weight measures for 5th, 7th, and 9th grade students who attend public schools are available from the California Department of Education as part of its fitness testing program (Simon and Lee 2005).

A different but related issue is in the many possible cases where multiple data sources are available for the similar indicators. Such a case would be with health insurance coverage, which is most often obtained from the Current Population Survey, the National Health Interview Survey, and the Medical Expenditures Panel Survey. However, in all these examples, health insurance coverage is asked and can be quantified in multiple ways, with different implications for the indicator. For example, asking whether anyone in the household was without health insurance at some point during the past year will yield a higher proportion than asking whether the respondent is currently (or recently) uninsured. While the former may quantify the extent of the problem more fully, the latter may provide more accurate point-in-time estimates. (See Understanding Estimates of Uninsured.) Appendix A includes a table with examples of health insurance indicators and data sources.

TABLE 2: SELECTED INDICATORS COMMON TO GENERAL HEALTH SETS

CHSI	AHR	HP2010 (Lead)	RWJ	America's Children	Older Americans
Life expectancy Mortality by age Infant mortality Leading causes of death and preventable death (injury, violence).	Premature death (YPLL)	Preventable deaths (could be specified with YPLL or major causes of premature death)	Life expectancy	Preventable deaths (injury, violence)	Life expectancy, mortality
Measures of Birth (Births to women < 18 years, unmarried women, low/very low birth weight and premature births).	Infant mortality	Low birth weight	Infant mortality, low birth weight	Mortality (infants, children, youth) low birth weight, adolescent births	
Risk factors (smoking, drinking, physical inactivity, fruit and vegetable eating).	Binge drinking, obesity, smoking	Substance abuse, physical activity, weight, tobacco use.	Physical inactivity, smoking	Smoking, alcohol use, illicit drug use	Smoking, physical activity, obesity
Health care (health insurance, preventive services use—cancer screening, immunization).	Lack of health insurance, immunization	Health care access, Health insurance, Immunization		Immunization, health insurance	Vaccination
HRQL (poor health days, self-rated health status).	Poor physical/ mental health days		Self-reported health status, activity limitation		Self-rated health status
No HS diploma, recent drug use.	HS graduation, violent crime, children in poverty	Violence, poverty		Poverty	
Race/ethnicity	Race/ethnicity	Disparities	Race/ethnicity	Race/ethnicity	

TABLE 3: SELECTED INDICATORS COMMON TO GENERAL HEALTH SETS

CHSI	AHR	HP2010 (Lead)	RWJ	America's Children	Older Americans
Major chronic conditions (obesity, diabetes, hypertension)	CHD and cancer death	Preventable deaths (could be specified with YPLL or major causes of premature death)	Adult chronic conditions (obesity, diabetes, CHD)	Preventable deaths (injury, violence) Asthma Emotional/ behavioral difficulties	Chronic health conditions Sensory impairment, oral health, depressive symptoms, Functional limitations
Severe work disability	Occupational fatalities	Disability	Activity limitation due to chronic conditions	Child maltreatment	
Major depression	Preventable hospitalizations			Family and social: Parent educational attainment, language spoken at home, difficulty speaking English, child living arrangements.	Diet quality—HEI
Physician/ health care provider supply	Adequacy of prenatal care	Hypertension screening, diabetic eye exam, cancer screening/ detection	Usual source of care	Education: Family reading to young children, math and reading achievement, HS academic counseling, youth not in school or working, college enrollment)	Use of health care services, mammography, prescription drugs
Dentist supply		Oral health.	Social factors, housing, community, work, the economy, income		Health care expenditures, Sources of payment for health care services.
Toxic chemicals/air quality standards		Physical environment		Economic circumstances: Stable parent employment, food insecurity and diet quality-Healthy Eating Index (HEI).	
Unemployed individuals.	Per capita public health spending	Cognitive development	Health care expenditures (OECD countries)	Physical Environ–ment and Safety: Drinking water quality, housing problems, youth victims of serious crime. Child and adolescent injury	Cost of care (out of pocket expenditures), veteran's health care, nursing home care Literacy, health literacy

TABLE 4: NATIONAL DATA SOURCES

NATIONAL DATA SOURCES	EXAMPLES OF INDICATORS/MEASURES	GEOGRAPHIC DRILL DOWN INT'L	 NATION	 STATE	 COUNTY	APPROXIMATE SAMPLE SIZE; GEOGRAPHIC AND SUB-GROUP ANALYSES; OTHER CAPABILITIES
Social and Environmental Health Determinants						
American Community Survey US Census Bureau	Population and demographic characteristics (e.g., age, sex, race/ethnicity, income, poverty, children living in poverty, educational attainment, household size and composition)	X	X	X	X	ACS sample provides annual estimates to populations of 65,000 or greater
Current Population Survey US Census Bureau	Children's health insurance coverage, income, food security, employment, labor force characteristics		X	X		Approximate sample is 60,000 households (from year 2001 forward); state-based sample design
National Assessment of Educational Progress US Dept. of Education	Educational achievement (e.g., math, reading, science proficiency)		X	X		Large urban districts
American Housing Survey	Housing		X	X		Large metro areas
Physical Environment						
Air Quality System, EPA	Outdoor air quality (pollutant concentrations, total suspended particulate)		X	X	some	Data collected by state and regional air quality monitoring agencies
NHANES	Indoor air quality		X			(see below)
Toxics Release Inventory, EPA	Toxic chemical releases into environment		X	X	some	

TABLE 4: NATIONAL DATA SOURCES (continued)

NATIONAL DATA SOURCES	EXAMPLES OF INDICATORS/MEASURES	GEOGRAPHIC DRILL DOWN INT'L	NATION	STATE	COUNTY	APPROXIMATE SAMPLE SIZE; GEOGRAPHIC AND SUB-GROUP ANALYSES; OTHER CAPABILITIES
Health Outcomes: Birth and Death						
National Vital Statistics System—Birth File and Linked Birth-Death File NCHS	Birth (infant mortality, low birth weight, adequacy of prenatal care, educational attainment of parents)	X	X	X	X	Data for most jurisdictions. Low prevalence events limited for sub-group analysis and single year reporting
National Vital Statistics System—Mortality and Multiple Cause of Death Files NCHS	Cause-specific mortality, Premature mortality (e.g., YPLL), Life expectancy	X	X	X	X	Data for most jurisdictions. Aggregate measures and leading causes generally available for sub-group analysis and single year reporting.
Health Outcomes: Health Status, Risks, Behaviors						
Behavioral Risk Factor Survey System (BRFSS) CDC	Health-related quality of life (poor health days, etc.), health conditions (asthma, diabetes), obesity/overweight, use of recommended health care services, health behaviors (e.g., smoking, physical activity), and access to care		X	X	some	Variable by population size and prevalence estimate* (see note); Annual sample size approx. 350,000. Oversamples available. 170 metropolitan and micropolitan statistical areas (MMSAs)
Disease Surveillance Systems CDC	Infectious diseases (HIV/ AIDS, TB, Hepatitis, Sexually Transmitted Disease)	some	X	X	X	All jurisdictions; variable completeness of reporting some international comparisons
Monitoring the Future	Drug, alcohol, cigarette use, attitudes, and perceptions among youth (in 8th, 10th, and 12th grades)		X			Approximately 48,500 students in 410 schools were surveyed in 2006

*Highly variable depending on population size, sample (denominator) and prevalence estimate (numerator). Estimates of the number of counties reportable from aggregation of BRFSS surveys were tabulated for the CHSI project. For example, the number of reportable counties ranged from 2719 counties for diabetes to 687 counties for Pneumonia vaccine for persons ages 65 years and older.

TABLE 4: NATIONAL DATA SOURCES (continued)

NATIONAL DATA SOURCES	EXAMPLES OF INDICATORS/MEASURES	GEOGRAPHIC DRILL DOWN				APPROXIMATE SAMPLE SIZE; GEOGRAPHIC AND SUB-GROUP ANALYSES; OTHER CAPABILITIES
		INT'L	NATION	STATE	COUNTY	
Health Outcomes: Health Status, Risks, Behaviors (continued)						
National Health Interview Survey CDC	Illnesses, injuries, activity limitations, health insurance coverage, use of health services, health conditions, smoking, alcohol use, vaccination, cancer screening, and other general health topics		X			Adult and child data; Recent surveys have oversampled Black and Hispanic persons. Detailed demographic data enables sub-group analyses. Sample size (completed interviews) is approximately 35,000 households containing about 87,500 persons. No reliable state-level estimates.
National Health and Nutrition Examination Survey (NHANES) CDC and NHCS	Chronic diseases (including undiagnosed conditions) and conditions, obesity, serum cholesterol, blood pressure, physical fitness, diet and nutrition, smoking, exposure to tobacco smoke, immunization status, mental health, oral health		X			Nationally representative sample; Annual continuous sampling (from 1999 forward). Approx. sample size is 9,000-10,000 for 2003-04. Oversample of some sub-groups; limited racial/ethnic sub-group analyses.
National Immunization Survey NCHS, CDC, NIP	Immunization during childhood for vaccine-preventable disease		X	X		Sample size is approximately 27,000 children ages 19-35 months. Data available by state and approx. 30 urban areas by poverty, race/ethnicity.
National Survey of Children's Health (NSCH) (Analyzed by CAHMI) NCHS	Health and functional status (emotional, behavioral, health, developmental problems among children; childhood overweight, asthma); Early childhood (parenting practices), middle childhood and adolescence (sleep, exercise, reading, social/emotional difficulties, school engagement); Family functioning (family activities, stress); Parent health, Neighborhood conditions.		X	X		HRSA regions. Reliability of funding?
Youth Risk Behavior Survey CDC	Overweight, physical activity, diet, school food environment.		X	some		Data for selected areas (e.g., prevalence of overweight for 29 states and 14 large metro districts)

Indicators and Data Sources for Health System Performance

Table 5, Table 6, and Table 7 provide examples of indicators of health system performance, organized by access, cost, and quality.

Indicators of *access to health care* primarily relate to insurance coverage, usual (or regular) source of care, difficulties/delays in the receipt of needed care due to cost, physician supply, and physician/dental visits (Table 5). Reports focused on disparities diverge slightly, with Georgia emphasizing provider supply and diversity, linguistic isolation, and the availability of federally qualified health centers. Kaiser Family Foundation also provides measures related to the health care safety net. The National Healthcare Disparities Report, unlike its companion report also from AHRQ, includes indicators of access to health care as a contributor to poor quality.

Table 6 shows examples of indicators related to *health care costs and efficiency*. Health care costs are measured in several reports using comparable measures for the nation as a whole and for governmental spending (e.g., per capita health care spending, annual growth in spending, percentage of GDP, spending by category, etc.); several of these measures are comparable to those in OECD countries, and are appropriate for international comparisons. In addition to national spending, costs are measured from other perspectives such as employer costs (e.g., insurance premiums) and costs to consumers (out-of-pocket spending on prescription medication, co-payments) in both the Kaiser and the California HealthCare Foundation reports.

Another category related to cost is unnecessary spending and avoidable care. Indicators like avoidable hospitalizations (e.g., ambulatory care sensitive conditions, readmission rates) are shown in the State Scorecard as well as AHRQ reports. These measures are often linked to poor access to outpatient care or variation in hospital capacity. Other indicators measure variations in expenditures (use and cost of health care) among Medicare recipients during the last two years of life relative to national or regional benchmarks, as shown in the Dartmouth Atlas. These indicators represent huge costs in terms of Medicare reimbursements. The Atlas uses several measures to identify patterns of care that, if changed, would generate savings and improve quality and the receipt of effective care.

Efficiency measures are important, but not widely available. However, two reports use composite indexes to quantify relative efficiencies of hospitals. The first, published by the Dartmouth Atlas's is the "hospital care intensity index" or HCI (Section 5.0, Figure 10). The HCI index can be generated to show or compare any hospital referral region, county, or state using an interactive feature on the web site or other query tools. The second is AHRQ's "relative index of hospital cost efficiency", which is considered developmental at this point.

Table 7 shows indicators related to *quality*, including the use of clinically effective care, patient safety, receipt of timely and patient-centered care, and patient perspectives on experience with receipt of health care services. One of the main sources of quality indicators is the National Healthcare Quality Report from AHRQ, the result of a broad consensus and technical process involving agencies throughout HHS. The majority of measures are for use of effective care in the detection, treatment, and management of chronic conditions as well as acute health events. Fewer measures are available for receipt of timely and patient-centered care.

In terms of patient safety, indicators from HealthGrades employ patient safety indicators (PSIs) developed by the AHRQ in a composite measure that can be used to compare performance in different hospitals and states, as done in their report card. The PSI's, however, may represent a limited spectrum of patient safety indicators. By contrast, IHI's Five Million Lives campaign sets a broader quality framework for improvements in patient safety, and may offer indicators to monitor the impact of the system improvements that result in decreased incidents of medical error and patient harm. (See Five Million Lives, 2007).

Examples of data sources for *Health System Performance* indicators are shown in Table 8. Many data sources come from individual reports from hospitals and providers, for example, hospital discharge and billing data, and represent data that are voluntarily reported as well as mandated. In some cases, the data are designed for other purposes and may be incomplete (e.g., data on medical error and patient safety as derived from discharge codes) but still represent the most valid data available. Indicator reports that provide summary measures of U.S. health care costs are based on data from several sources, including the Centers for Medicare and Medicaid Services (CMS) Office of the Actuary, which publishes data on total national health expenditures.

While the focus of this review is largely on available data collected at a national level and disaggregated to state and local level, many indicators worthy of consideration may be limited in their ability to be disaggregated geographically or by population groups (age, racial/ethnic groupings). The review attempts to be sufficiently broad as to be useful for informing future data development or collection efforts.

In addition, local jurisdictions often analyze state and local information for their indicator efforts, and many such examples are noted in the individual report summaries. Such sources include local surveys or assessments, administrative data from state or local service systems, or geographic level data about community conditions. While this review is limited to national data sources that can be disaggregated to local levels, it is acknowledged that part of the challenge to the committee and to SUSA will be sorting out what state/local data may be standardized enough to roll up (or scale) to the national level.

Selection criteria

Last, selection criteria are related to all aspects of indicator reports. Selection criteria are critical for evaluating whether the indicators themselves represent a vital health issue, and multiple dimensions of an important health problem. Selection criteria are relevant to the data sources and ability to measure the condition of importance, and whether the data can be analyzed in a way as to be meaningful (e.g., geographic, racial/ethnic, or other sub-groups). And selection criteria apply to communication and whether people intrinsically understand the indicator as communicated. An example of standard selection criteria for health indicators is provided in Section 5.0, Figure 11.

TABLE 5: SELECTED INDICATORS FOR HEALTH SYSTEM PERFORMANCE: ACCESS TO CARE

Trends and Indicators in a Changing Health Care Marketplace Chartbook (Kaiser Family Foundation)	National Healthcare Disparities Report (AHRQ)	State Scorecard on Health System Performance (The Commonwealth Fund)	Georgia Health Disparities Report
Trends in health insurance enrollment Trends in health insurance premiums Trends in health insurance benefits Trends in the structure of the health care marketplace Trends in health plan and provider relationships Implications of health market trends for consumers	People under 65 with health insurance People uninsured all year People who have a specific source of ongoing care People who have a usual primary care provider People who experience difficulties or delays in obtaining health care or do not receive needed care People who experience difficulties or delays in obtaining health care due to financial or insurance reasons Dental visit in past year Potentially avoidable hospital admissions Mental health and alcohol/drug treatment and counseling	Adults under age 65 insured Children insured Adults visits to doctor in past two years Adults without a time when they needed to see a doctor but could not because of cost	Access to providers—Federal Health Professional Shortage Areas for primary care, mental health and dental health Health professional diversity (physicians) Health insurance coverage Persons living in linguistically isolated households Health care available for uninsured people (primary care safety net)

TABLE 6: SELECTED INDICATORS FOR HEALTH SYSTEM PERFORMANCE: COST AND EFFICIENCY OF CARE

Organization for Economic Cooperation and Development	Health Care Costs 101 (California HealthCare Foundation	Dartmouth Atlas (Dartmouth Institute for Health Policy and Clinical Research)	State Scorecard on Health System Performance (The Commonwealth Fund)	National Healthcare Quality Report (AHRQ)
Health care expenditures: Total expenditure on health, % GDP Total expenditure on health, Per capita US dollars Public expenditure on health, % total expenditure on health Pharmaceutical expenditure, % of total expenditure on health Health care resources: Practicing physicians, nurses: density per 1,000 population Medical graduates, nursing graduates: density per 1,000 practicing physicians/nurses. Acute care beds, density per 1,000 population. MRI units per million population CT Scanners per million population	Total Health care spending Health care as share of GDP Per capita spending Growth in spending (total and per capita) Contributors to spending Payment sources Spending categories Growth in spending by major spending categories Annual out-of-pocket spending per capita	Medicare spending on patients with chronic illness in the last 2 years of life: Composite measure of intensity of healthcare resource use in last 2 years of life (HCI) relative to benchmark. - Total spending - Resource inputs per 1,000 patients - Care Intensity - Terminal care - Comparisons to benchmark Reimbursements per decedent; hospital days per decedent; and reimbursement per day; dollar amounts and ratio of spending to benchmark.	Avoidable Hospitalizations (Ambulatory Care Sensitive Conditions - ACSCs): Admissions for pediatric asthma Asthmatics with an emergency room or urgent care visit Medicare hospital admits for ACSC's Medicare 30-day hospital readmission rate Nursing Home residents with a hospital admission or readmission within 90 days. Total single premium per enrolled employee at private sector establishment. Total Medicare (A&B) reimbursement per employee.	Costs of potentially avoidable hospital admissions Relative index of hospital cost efficiency

TABLE 7: SELECTED INDICATORS FOR HEALTH SYSTEM PERFORMANCE: QUALITY—EFFECTIVE CARE, PATIENT SAFETY

Health Care Quality Report (AHRQ)	Health Care Quality Index (OECD)	Patient Safety: HealthGrades	Five Million Lives Campaign—Interventions
Breast Cancer: Early screening and treatment, mortality	Cancer: Breast cancer survival Mammography screening Cervical cancer survival Cervical cancer screening Colorectal cancer survival	Composite score based upon 16 Patient Safety Indicators from AHRQ: proportion of high/low performing hospital;	Deploy rapid response teams to patients at risk of cardiac or respiratory arrest.
Diabetes: Management of diabetes and end-stage renal disease		Deaths due to Medial error	Deliver reliable, evidence-based care for acute myocardial infarction
Heart Disease: Counseling on risk factors, treatment of AMI and acute heart failure, deaths per 1,000 hospital admissions with AMI.	Acute Myocardial Infarction (AMI) 30-day mortality rate Stroke 30-day case fatality rate Smoking rates	Number of states adopting NQF's patient safety guidelines.	Prevent adverse drug events through drug reconciliation (reliable documentation of changes in drug orders)
HIV/AIDS: prevention of new cases.			Prevent central line infections
Maternity care: Timely prenatal care (in first trimester), Infant birth weight			Prevent surgical site infections Prevent ventilator-associated pneumonia
Child health: receipt of vaccinations by 35 months, treatment of gastroenteritis, receipt of preventive health care, dental visit.	Vaccine preventable diseases: Coverage for basic vaccination		Prevent pressure ulcers Reduce methicillin-resistant Staphylococcus aureus
Mental Health and Substance Abuse: treatment for depression, substance abuse.			(MRSA) infection Prevent harm from high-alert medications
Respiratory disease: Pneumonia Immunization and treatment, unnecessary antibiotic use (for colds).	Asthma mortality rate Influenza vaccination for adults over 65		Reduce surgical complications
Asthma management Tuberculosis treatment		Consumer Quality Indicators CMS/CAHPS/Hospital Compare	Deliver reliable, evidence-based care for congestive heart failure.
Nursing Home, Home Health and Hospice Care: Harm during stays in nursing facilities, outcomes of home health care.		Composite quality score (all Medicare/Medicaid enrollees)	Get boards on board.
Timeliness: Getting appointments for care.	Waiting time for femur fracture surgery	Patient ratings of experience during last hospital stay.	
Patient Centeredness: Patient experience of care.			

TABLE 8: HEALTH SYSTEM PERFORMANCE DATA SOURCES

DATA SOURCE	EXAMPLES OF INDICATORS/MEASURES	GEOGRAPHIC DRILL DOWN INT'L	NATION	STATE	COUNTY	NOTES
Consumer Assessment of Health Providers and Systems (CAHPS) AHRQ	Patient experiences while in the hospital or in ambulatory care settings		X	X		Supports standardized surveys of consumer and patient experiences with health care. Available on Hospital Compare (CMS)
Healthcare Effectiveness Data and Information Set (HEDIS) NCQA	Measures of use of effective care, access to care, patient satisfaction in outpatient care settings		X	X	other	Used by Health plans that are accredited or certified (required for plans that accept Medicaid and Medicare). Data covers participating health care systems only. Report cards on individual plans.
Health Care Quality Indicators (HCQI) OECD	Measures of effectiveness, safety, and patient centeredness		X			Suitable for international comparisons with 23 OECD countries
Healthcare Cost and Utilization Project (HCUP) Public/Private	Hospital discharge data includes diagnoses and procedures, discharge status, patient demographics, and charges for all patients, regardless of payer (e.g., persons covered by Medicare, Medicaid, private insurance, and the uninsured)		X	X		The information is translated into a uniform format to facilitate both multistate and national-State comparisons and analyses. Some (~20) states also contribute emergency room admission data and ambulatory surgery data, and pediatric inpatient data.
Medicare Claims —CMS	Enrollment, use, cost, payments, detailed services, diagnoses, procedures, access to and quality of care. Data available for most providers and types of health care services (e.g., hospital, outpatient, nursing home, home health care, hospice).	Cost Quality	X	X	X	Data for all enrollees. County, city, hospital and hospital referral area via Dartmouth Atlas.**

TABLE 8: HEALTH SYSTEM PERFORMANCE DATA SOURCES (continued)

DATA SOURCE	EXAMPLES OF INDICATORS/MEASURES	GEOGRAPHIC DRILL DOWN				NOTES
		INT'L	NATION	STATE	COUNTY	
Medical Expenditure Panel Survey (MEPS) AHRQ	Health care use, expenditures, source of payments, insurance coverage, and quality of care		X			Household, medical provider, and insurance components. 13–15,000 families annually.
National Hospital Discharge Survey HCUP	Preventable hospitalizations (e.g., America's Health Rankings), Leading causes of hospital admission (e.g., Georgia Health Disparities). Patient Safety Indicators		X	X	X	By hospital. Reported by hospitals to state oversight agencies. State data collected via HCUP (a federal-state-private partnership that produces many databases related to hospital care).

** Note where secondary analysis was critical to indicator development

3.3 Communication—Presenting and Framing of Health Indicators

The central purpose of all of the indicator reports is to improve health through a variety of mechanisms—more informed citizens and decision makers, better planning and priority setting, better functioning systems, and targeted investments, for example. However, the indicators reviewed have varied abilities to communicate with broad professional, much less public, audiences.

A critical concern for the committee charged with selecting the indicators for the State of the USA is how the indicators will be communicated based on what the American public wants and needs to know. The choices as to how the indicators are framed and communicated will certainly need to be based upon pressing concerns in order to engage inquiry on the part of site visitors. How these concerns are defined is the subject of other work, however, at least three contextual considerations emerge from the landscape of health indicator reports reviewed:

- First, is that the current rate of spending on health is not sustainable. Furthermore, Americans and public officials at all levels of government are extremely concerned about rising health care costs and the impact on budgets as well as access.
- Second, is that our level of health, quality of life, and performance of our health system are not consistent with our level of spending. Nor is health always equitably distributed, especially among all racial/ethnic and income groups. Many opportunities for prevention, and increasing the health return on investment exist.
- Third, the evidence that social factors such as poverty, poor educational attainment, and degraded community environments contribute to poor health is increasingly acknowledged in health indicator reports. These factors also contribute to many other problems in our society, including crime and violence.

Some of the more engaging examples use goals or desired results to frame and select the indicators, and this can be accomplished in a variety of ways. Seattle-King County in *Community Counts*, used responses to a biennial public survey to frame "valued conditions" for their community, which then frame the indicators. Valued conditions as stated by the community differ from traditional conceptual frameworks, and include statements such as "People create a balanced daily lifestyle with adequate time for interaction with families, friends, for leisure activities, and for volunteer activities in the community". Another is that businesses and corporations are "family and community friendly…" and "quality daycare is available for all who need it". As such, these valued conditions form a compelling basis not only for indicators but for a collective agenda to address them.

Valued conditions share many similarities with Results-based Accountability (RBA; Friedman 2005), for example, where groups agree upon a set of goals. RBA provides a structure and definition for goals (e.g., conditions or status we want for our children, communities, etc.), indicators (e.g., how these conditions will be measured), and strategies (approaches based on evidence) and links these with performance measurement and budgeting measures (e.g., governmental or private performance and investments). Many local indicators efforts are summarized by Friedman, in addition to providing guidance as to various framing approaches. Project Thrive, a national effort to improve and standardize indicators tracked by state early childhood programs, exemplifies the RBA approach. Friedman offers guidelines for assessing the qualities of indicators. In addition to "data power" and "proxy power," "communication power" assesses whether you could stand in front of a crowd in the town square and make a statement about your indicator that will be readily understood by all. New York City's "Take Care New York" community health profiles speak directly to lay persons in their indicator framing approach (see Exhibit 4.2.4).

Indicators can also be framed and linked with civic agendas, as is shown in the comprehensive indicator systems at the local level such as The Boston Indicators Project as well as the Jacksonville County Community Indicators Project. Whereas citizen's interest feed into what is measured, what is measured feeds back to the community to join together to promote responses or interventions. For example, in Jacksonville, local meetings about what is and should be done in response to crime is a process organized in response to indicators of increased crime and community perceptions of being unsafe.

The Trust for America's Health has developed "Top Ten Priorities for Prevention" (shown in Section 5.0, Figure 12). These priorities share similarities with the approaches described above in that they set goals as well as attach themselves to future directions and actions. The Prevention Institute has developed a prototype set of indicators for primary prevention framed around social indicators—equity of opportunity, people, place, and health system factors (Section 5.0, Figure 13). Sample indicators to accompany this framework are shown in Section 4.0, Exhibit 4.5.2.

Rankings/Grades

Several reports employ rankings by state, city, or county (e.g. *America's Health Rankings, Kids Count, Big Cities Health Inventory*). *Kids Count* employs two sets of rankings for states, one for "Right Start" which is based upon 10 indicators related to birth outcomes, and another for *Kids Count* based upon 10 indicators related to children and youth. *Big Cities Health Inventory* includes rankings for the 54 largest cities in the U.S. An example of an effective graphic for a comparative ranking is shown in Section 5.0, Figure 14, which shows the percentage difference between lung cancer mortality rate and the Healthy People 2010 goal for each city. These can be useful as summary indicators for several individual indicators when comparing states or local areas.

The Health of Wisconsin report is broken down into four life stages: Infants (<1 year); children and young adults (ages 1–24 years); working aged adults (25–64 years); and, older adults (age 65 +). Within these categories, overall grades are assigned for health and disparity. Grades are also assigned for gender, educational attainment, type of county, and racial/ethnic categories (Section 5.0, Figure 15).

A more in-depth use of rankings is shown in the State of Georgia Health Disparities report which uses grades to rate each of the state's counties on indicators of health disparities, and uses comparative rankings with other counties in Georgia (Section 5.0, Figure 16).

Use of the Index

The index is a useful means of communicating complex concepts in a single measure. Some indexes are useful for facilitating comparisons. An example of this kind of index that was mentioned earlier is in the Dartmouth Atlas, called the Health Care Intensity (HCI). The HCI provides one measure of the level of health care resources used during the last 2 years of life, and provides a basis upon which to make comparisons by type of service, hospital, geographic area or other categories of health care. It is useful for benchmarking because at varies greatly across different health care systems and locations, and a high HCI is associated with both excessive costs and poor outcomes (clinical and patient experience) (personal communication with John Wennberg). Another index is the composite measure of incidents of medical error used in HealthGrades report on patient safety. It allows the 16 patient safety indicators developed by AHRQ to be easily tracked over time and compared among different regions and hospital systems.

Recently, the Gallup-Healthways Index of Well-being made news with its "index of health and happiness" constructed from the results of daily surveys of 1,000 Americans (Index of Well-Being, 2008). It observed that while 49% of the U.S adult population is happy and healthy, 47% are "struggling" and 4% are "suffering". The ongoing survey that informs this index is being conducted all over the world with the hope of making regular international comparisons. The Child Well-being Index (Foundation for Child Development, 2007) is another effort to measure relative child well-being, while keeping cohort effects constant, and to facilitate national comparisons. On the one hand, while indexes are simple and profound (i.e., worries about money, food, jobs, poor health lead to suffering), they can over simplify. Good indexes can also obscure important patterns of health and poor health obtained by capturing variation, and can also be insensitive to changes over time, depending on how they are constructed (i.e., quality and sensitivity of the variables that are included in them). Furthermore, it is at times difficult to attach meaning to a number—what does a child well-being result of "5" really mean?

3.3 Communication—Presenting and Framing of Health Indicators

Use of Maps and Geographic Information Systems

The availability of GIS has allowed for reliable health indicators, such as premature mortality and life expectancy, to be analyzed by geographic and demographic factors. GIS methods provide powerful tools for analyzing trends and disparities in county-level life expectancy (Ezzati, 2008) as well as relative gains and losses in health (mortality) by social factors such as income, a variable that is not available from Vital Records (Krieger, 2008). Such methods are not only important for research but provide examples about how to communicate complex patterns and trends in health in a manner that can be easily understood. Highlights from both studies were summarized in the *New York Times*, as shown in Section 5.0, Figure 17.

Several reports including *Community Health Status Indicators*, and New York City's *Community Health Profiles*, and *The Dartmouth Atlas* provide examples of the use of maps. *The Dartmouth Atlas* is perhaps the most prominent among efforts to show variation in measures of health services use and outcomes by geographical areas—jurisdictional, hospital service, or other boundaries. *Community Health Status Indicators* will also employ small area analysis at the county level, and will include peer county comparisons and maps on approximately 200 indicators. New York City *Community Health Profiles* show statistics and thematic maps based upon 10 health indicators for New York's 42 community areas.

Several reports serve as examples of presentation approaches that aid in the dissemination and communication of indicators. For example, RWJ's "What drives health" features charts that can be downloaded as PDFs or Powerpoint slides. CHSI compiles county and comparative statistics into a user-friendly brochure that can be used to duplicate for meetings or for groups without access to the Internet.

Indicators directed to Consumers

Examples of health system performance indicators designed for use by consumers include the *Hospital Compare* and *Nursing Home Compare* sets (CMS). The federal HEDIS health plan report cards also provide data for the consumers, and, although it is not included in this review, may be a possible indicator source for quality.

3.4 Gaps in Indicators

In spite of the importance of health and health data, many gaps in our national statistical system exist (NCVHS 2002). For example, while a large body of evidence has accumulated about the importance of conditions and experiences early in life, robust data sources on early childhood health and social and community environments are not well developed. The National Survey of Early Childhood health is an important effort to fill these gaps but has not received steady financial support. The National Center on Childhood Poverty's Project Thrive (Exhibit 4.5.4) is in its early stages and is attempting to fill the gap of indicators at the state (and national) level related to early childhood based upon potential early childhood indicators from major national and state sources. For youth, the YRBS provides very few state and local estimates.

Consistent with the growing interest in early childhood indicators (RWJ, 2008; IOM, 2003) are Life Course indicators, which would reflect optimized health over the entire life course. A modest set of life course can be found in the Healthy People 2010 leading indicators (Chrvala and Bulger [eds.], 1999). Social indicators to monitor "school readiness," focused on health and developmental optimization were used in Los Angeles County (Wold and Nicholas, 2007). And yet, practical examples of indicator reports organized by life course are not readily found. Table 9 shows a hypothetical example of indicators organized by life course. These indicators are focused on protective factors (e.g., safe, nurturing and positive social environments in families and in communities) and risks (maternal depression, family violence, social isolation) that are important determinants for child health and relate to improving health trajectories over time, well into adulthood, as depicted in Section 5.0, Figure 18 (Halfon, 2005).

Physical environmental conditions are also important determinants of health, although somewhat limited to monitored exposures and illness (e.g., lead poisoning) as well as drinking water and air quality—important, but small slivers of environmental health interactions. Environmental public health indicators from the National Center for Environmental Health are provided in a framework that is organized along a continuum of such interactions, including indicators related to hazards, exposures, health effects, and interventions related to the physical environment. Disaster preparedness planning may also be generating some important indicators related to human interactions with the natural physical environment (see Exhibit 4.5.3).

Another notable gap is related to older people and indicators of long term care needs, availability of services, and quality of services. Nursing Home Compare (CMS) is one attempt to provide such data, but represents a fairly narrow slice of the long term care universe. The need for indicators for health in aging is emphasized by projections that the number of people over 65 will more than double over forty years—from approximately 34 million in the year 2000 to 80 million by 2040.

TABLE 9: EXAMPLE INDICATOR SET— MERGING LIFE COURSE AND DETERMINANTS APPROACHES

Family and Community Conditions:

Poverty

Income

Violence

Stable Employment

Education

Housing—exposure to toxins, crowding

Food security

Race/ethnicity—disparities in opportunities and above indicators

Parental educational attainment at birth and early in childhood

Parent less than age 18 years

Parenting practices

Parental depression or emotional/behavioral problems

Interactions with health care system (early in life and throughout):

Adequate prenatal care

Immunization

Receipt of well-child care, developmental support,

Receipt of preventive services

Management of chronic conditions

Avoidable hospitalization

Interactions with other systems—early in life and throughout (child care, educational, juvenile justice, child welfare systems):

Pre-school attendance

Low/High performing schools

High school completion

College attendance

Perpetrator/victim of crime

Child maltreatment

Parent or family member in criminal justice system

Health Trajectory and Outcomes:

Smoking

Alcohol/Drug abuse

Physical activity

Diet and nutrition

Activity limitations

Poor health days

Obesity

Asthma

Injuries

Infectious Disease

Chronic Health Conditions

Premature Death

Life expectancy

Robert Wood Johnson Foundation

Counting Change

Measuring Health Care Prices, Costs, and Spending

March 2012

Health care spending in the United States continues to escalate; it is now nearly 18 percent of the gross domestic product. A number of major efforts across country are attempting to understand, measure, and ultimately slow the rate of spending growth. Many efforts also seek to publicly report information about price, cost, and spending. Yet each of these initiatives is hampered by the problem of defining and quantifying cost and spending, and many are trying to understand and measure economic variables in novel ways. As these measurement initiatives develop, those attempting this work almost immediately face a series of fundamental questions. Definitions matter in this effort. The varying perspectives of stakeholders do as well. In June 2011, the Robert Wood Johnson Foundation (RWJF) convened a meeting of leading experts in Washington, D.C., to discuss the difficulties of cost and spending measurement and reporting. Leading experts from health plans, employers, government and philanthropic organizations, and others sought to develop practical guidance for the field in measuring price, cost, and spending. Strategies discussed in that meeting inform this paper.

Picture a business traveler who needs to fly from Atlanta to New York City. She has a plethora of factors to consider when buying a ticket for a flight. These include which New York-area airport she would like to use; departure and arrival times; any loyalty or rewards programs she might have with a particular airline; and the price of the ticket. She's likely to think about each of these factors based on her own needs when buying her ticket.

Price matters to her. It's not the only variable that matters, but it is one of many relevant issues she will take into account. Yet the factors that help create that price likely do not matter to her at all. She doesn't care about the cost of jet fuel, higher landing fees, or the salaries of the pilot and crew. The airline's profit margin or quarterly return to shareholders is of little interest to her. She just wants to know what her ticket will cost her. She does recognize that the price of the ticket does not include everything she will spend—that she'll face extra charges to check a bag, for instance, and that her decision on which airport she uses will influence the time and price of her transport from the airport to her hotel. But for the most part, the price of the ticket is a known quantity that she can consider when making her decision. She can find out the price of a ticket easily—through an Internet-based travel agent or by contacting the airline directly—and the price she is quoted is the price she will pay.

Now picture the pilot. His contract is up for renewal and his labor union is negotiating a pay increase. The airline says it can't be done and cites higher and rising jet fuel costs as two reasons why. The pilot's union, unlike the business traveler, cares very much about these costs, because the union needs to take them into account in understanding what the airline can or cannot afford to pay its members.

Consumers, businesses, oversight bodies, and other stakeholders encounter these same issues in every industry. And in every industry, the costs, prices, and total spending are often easily understandable.

But not in health care. Why?

The Measurement Conundrum

The measurement of price, cost, and spending is a key ingredient in building an accountable health care system. Multiple stakeholders would benefit from a coherent measurement system. Yet measurement of these economic variables remains extraordinarily challenging.

There is, as top health economists have observed, "an almost complete lack of understanding of how much it costs to deliver patient care."[1] Little is known about how prices are derived. The answer to the basic question of what health care costs often is unknown.[2] Payers see a bill, but generally are given very little detail about how prices in that bill are determined.

The resultant health care cost and pricing black box is increasingly unacceptable to many stakeholders. Health care professionals and payers face legitimate demands from purchasers of care, policy-makers, and the general public to conduct their business more transparently.

Of course, we do have some information. In fact, considerable data on prices and spending exist today. For example, at a national level, health expenditure accounts are well established—thus allowing policy-makers to conclude with confidence that the United States spends significantly more per capita on health care than does any other nation.[3] At a more granular level, health plans all know the prices they pay for health care services.

But questions remain about the accuracy and utility of the data that are currently available to the public and purchasers of care. Overall, data on price, cost, and spending are sparse, diffuse, and poorly organized and presented. Often, data are aggregated in ways that do not facilitate choice, negotiation, or accountability. Consider:

- Consumers are increasingly asked to make health care decisions based on price. This point is especially true for patients in high-deductible health plans (but not exclusive to those patients). Therefore, these consumers are able to track out-of-pocket expenses but typically do not enter the health care marketplace armed with price information. Even in those rare instances in which they do, they lack comparative information with which to make decisions and therefore have trouble acting on price. Further, insurance can distort their incentives. Because the health plan picks up most of the bill, consumers today often have no incentive to choose based on price. Instead, they act on the out-of-pocket price (i.e., co-payment) that they face, which may not offer the incentives to consume care efficiently. In some cases, the out-of-pocket price may actually discourage use of effective care or encourage use of low-value care.
- Like suppliers in any industry, health care providers have to allocate overhead costs to specific services (e.g., a procedure, an office visit). But in the health care industry, this allocation has too often been done in a way that obscures the cost of producing the service.
- Health insurers seldom know the costs of producing care. From their perspective, the cost is the price paid for each unit of service multiplied by the frequency of services. The mix of services, and the variation in price per unit paid to different providers, makes it difficult to glean the reasonable cost of producing care for an individual plan member.
- While some insurers do profile providers based on an episode of care, the information is often based on claims and discounts, and thus may not be the best or most useful information. Other insurers don't have access to such information at all for proprietary reasons, making it more difficult for purchasers to get usable aggregate information in a local market.
- The historical ability for health plans to simply pass on the increase in total cost of care to employers has shielded plans from understanding the true costs of care and applying normal market mechanisms to control rising costs.
- Insurance has a "distorting effect" on measuring cost as well because many health care prices are determined not by what it costs to produce them, but rather by what insurers will pay. Additionally, because health care services are billed to insurers as discrete units rather than as bundles of care, they must do additional analysis or purchase specific software to assess cost of care for an episode.

- The “unit” of cost and price is usually the service, not an entire episode or a bundle of care, which encourages a fragmented view of the health care system and makes it difficult for consumers, employers, and health plans to understand the total price paid for an episode and to compare that price paid for one provider with another.

Yet while measurement of these economic variables is complex, there is great demand for such information. Measurement would be an important step toward giving multiple stakeholders the tools to make decisions, hold each other accountable, increase transparency, and behave as rational actors in an economic marketplace.

Definition of Terms

Definitions matter. It is important to be precise when discussing price, cost, and other issues related to health care spending, because without precision these issues are easily confused. Throughout this paper, the following terms are used:[4]

Allowed amount: The most amount of money that a health plan will pay for a covered good or service. The allowed amount is negotiated between the plan and the provider, reflecting any discount the plan is able to achieve for its members. The allowed amount reflects the “true price” of health care, but allowed amounts usually are considered proprietary information and rarely are released to the public.[5]

Charge: The maximum amount of money a provider would seek to be paid. This amount often is charged to patients who do not have health insurance; health plans typically negotiate the charge down to the allowable amount on behalf of their members.[6] Charges in health care tend to be arbitrary and not reflective of true cost.

Claim: A request by a provider to an individual’s insurance company for the insurance company to pay for services obtained from a health care professional.[7]

Cost: The dollar value of resources used to provide care—i.e., the costs of various inputs used in the production of a health care good or service.

Discount: The difference between the charge (the maximum amount of money a provider would seek to be paid) and the price (the actual amount of money the provider is paid). Discounts are usually negotiated by insurance carriers based on their power to bring a large amount of business to a provider.

Episode (or, Episode of Care): Commonly, a defined period of illness and/or treatment that has a certain start and end date. The National Quality Forum has defined an episode of care as “a series of temporally contiguous health care services related to the treatment of a given spell of illness or provided in response to a specific request by the patient or other relevant entity.”[8]

Input: The factor used to produce a health care good or service, and the spending associated with that factor (e.g., nursing wages, prescription drug prices).

Price: The amount paid for a service or product, typically determined via market mechanisms that take into account the supply of and demand for the service or product.

Resource Use: A measure or set of measures intended to broadly capture indicators of the cost and efficiency of health care provisions. Health care resource use measures reflect the amount or cost of resources used to create a specific product of the health care system. The specific product could be a visit or procedure, all services related to a health condition, all services during a period of time, or a health outcome.[9] “Relative” Resource Use (RRU) measures have been developed by the National Committee for Quality Assurance to indicate how intensively plans use physician visits, hospital stays, and other resources to care for members identified as having one of five chronic diseases: cardiovascular disease, chronic obstructive pulmonary disease, diabetes, hypertension, and asthma.[10]

Spending: The total amount of money spent on health care, including total resource use and unit prices.

Value: The health outcome per dollar of cost expended.[11] Value incorporates product and service quality into the assessment of output, and also reflects the societal or personal value of the good or service consumed.

Health care is different, and that's not OK

In virtually every industry, the participating actors (e.g., producers of goods, customers) have some information about price, cost, and spending information to help them make decisions. In most sectors of the economy, consumers can usually see the price of the services or goods they are purchasing. Producers and suppliers understand the unit costs relevant to them for the pieces they add or the items in the supply chain they are purchasing to add to the final product.

In general, consumers do not need to understand the individual unit costs for all parts of a product or service. Instead, consumers are only interested in the piece that is relevant to them. For instance, if a consumer is buying a refrigerator, he does not care about the cost of the various parts of the refrigerator, or the transport costs of those parts to a manufacturing facility or retailer. That consumer likely does care, though, about his family's total spending for kitchen appliances, so he can make sure the new refrigerator fits into the total household budget.

Similarly, airline passengers don't care how much jet fuel costs; how much each part of the plane costs; or the salaries of the pilots, flight attendants, and ground crew. Passengers care about a host of factors including safety, convenience, timeliness, efficiency, comfort, and amenities—and, ultimately, price. Usually, they care about their total spending for air travel over the course of a year, for family budgeting purposes. For their part, airlines absolutely care about fuel costs and labor costs, and understand those production costs to optimize value for the customer.

Many health care providers and others object to the drawing of a comparison between health care and other industries. They argue that health care is not a commodity and should not be treated as such.[12] They have a point. Unlike a refrigerator or an airline ticket, health care often can be a life-or-death endeavor. If one does not need it (i.e., if one is healthy), one should buy very little; and if one needs it (i.e., if one is sick), cost becomes just one factor (often not the primary factor) in the quest to obtain the best treatment possible. Further, health care can be purchased "a la carte" as a one-time transaction (e.g., a knee replacement) or as a complete package (e.g., a year of diabetes care, including HbA1c tests and eye and foot exams), and patients may need or desire some of each type of care.

Yet American health care does not operate in a vacuum free of economic pressures. Doctors, nurses, and other health professionals need to get paid for their services. Drugs and medical equipment cost money. Hospitals and clinics have bills to pay. Like other industries, health care is subject to the laws of economics.

There are striking differences between health care and other industries, though.

One difference is the importance of charity care. If a person needs health care and cannot afford to pay, he or she often still gets some care. This care often is poorly organized and coordination of that kind of care is extremely challenging, but it is care nonetheless—and has to be paid for, somehow.

A second major difference is the public–private nature of the American health care system. Approximately half of health care in the United States is paid for by a governmental body (e.g., Medicare, Medicaid, the Department of Veterans Affairs, the Department of Defense, Indian Health Service). Government-funded payers, particularly Medicare, can have an enormous influence on health care costs because they comprise so much of the market. Moreover, public financing of care and general policy interest in health care has led to a desire among many actors to find ways to hold the system accountable for spending.

A third difference is that the payment of many health care services is done by a third-party insurer, not the consumer, thus shielding the consumer from the price of those services. It is true that this dynamic has shifted in the past decade. Consumers now must bear a higher percentage of their own care, and high-deductible health plans have led some consumers to shoulder a constant and rising percentage of the cost of each service consumed. Yet high-deductible plans remain a minority, and even in instances where people use those plans, many prices are obscured from those consumers. Further, even though consumers using those high-deductible plans bear a greater burden of cost than they might under a traditional plan, they usually still only pay a small minority of these costs out-of-pocket.

These differences, however, are not sufficient to justify the absence of pricing information or the lack of understanding of costs of production by health professionals. Health care might be complex, and the clinical pathways to treat a patient sometimes ambiguous, but that does not justify the inability to track the costs associated with the delivery of a unit of service.

There is, then, a dearth of information about price, cost, and spending. In some instances, data exist but are held as proprietary; in others, cost is a fundamentally unknown variable, thanks to decades of cost shifting and perverse financial incentives. Some costs and spending can be measured, and some data are available—but systems for reporting these do not measure costs or spending in units that are meaningful to any stakeholder.

The importance of perspective

Different health care price, cost, and spending information matters to different actors. Thus, it is important to have different measures to satisfy different needs.

For instance, consumers care about out-of-pocket price. Today, that typically refers to the price of a specific service, as if this service were delivered in a vacuum. However, consumers are seldom aware of out-of-pocket prices for an entire episode of treatment. They are usually made aware of that total only after the episode has concluded, and they add up the individual out-of-pocket expenses. Even assuming identical quality (which is hardly a given), it makes little sense to choose the least expensive knee surgeon if he only operates at the most expensive hospital, for example. Consumers and patients should understand ahead of time their potential out-of-pocket expenses, and be spared information that they do not need.

Conversely, consumers arguably care about their household expense on health care (that is, the portion of insurance premium paid, Health Savings Account or Flexible Spending Account contributions, and out-of-pocket expenses). However, community-level measurement and comparisons that include the entire population—such as aggregate spending—are hardly interesting at all to those very consumers, because that information is not actionable information for them. Further, comparisons of cost and spending across communities are also not of great interest to consumers. (If spending is higher in Memphis than in Nashville, that's interesting but not useful to consumers, because most of the time consumers can't simply go to another community for care.)

But this community-level information would be of great interest to policy-makers—and, to a lesser extent, purchasers—because they can design interventions or negotiate based on these data. Policy-makers are interested in fostering accountability—in identifying what works within the system and what does not, learning lessons from success, and interceding in failing organizations in order to help turn them into successful enterprises.

What can measurement achieve?

It is a maxim in business that one can improve only that which one can measure. This point oversimplifies the challenges of cost and spending measurement but speaks to an essential truth: information enables decisions and, ultimately, empowers change.

Measurement and reporting are not foreign to health care. Measures of clinical quality are routinely collected, risk-adjusted when necessary, and publicly reported. Yet the concept faces a new set of challenges when applied to price, cost, and spending, because these issues get directly at our financial well-being. Even so, multiple audiences would benefit from cost and spending measurement. They include:

- Providers, who need better internal cost accounting mechanisms and would benefit from more transparent cost information as a means to gauge their own performance, establish bundled (or "episode") pricing, and identify efficient referrals;
- Employers and other purchasers, who could use cost and spending information to help negotiate with health plans and providers. Better spending data can help them understand how their premium dollars are spent and gauge the relationship between spending and clinical quality;
- Oversight bodies, which can use reliable price, cost, and spending information to identify fraudulent or otherwise mismanaged behavior, and also identify areas in which providers are excelling; and
- Consumers, who are increasingly being asked to make health care decisions based on price, especially depending on the design of some high-deductible health plans—and who arguably can know their respective out-of-pocket expenses but still lack comparative information with which to make decisions.

Yet significant questions remain about reporting that information. These include questions about whether the varying information can be presented in such a way that various audiences, including but not limited to consumers, can understand and use it; whether publicly available price, cost, and spending information can change behavior; and whether these data can fairly depict noteworthy exceptions in the circumstances of individual reporting entities (e.g., fair representations of differences in providers' circumstances or patient populations).[13]

Who Needs What? Types of Measurement and Audiences That Need It

Different measures indicate different things. Different audiences have different perspectives, needs, and capacities for understanding and using information. Stakeholders respond to data revealed by measures depending on what exactly those data reveal and how they are presented. In general, these measures can be used to enable:

- choice (e.g., managerial, purchaser, or consumer decisions);
- negotiation (e.g., to set provider reimbursement rates); and
- accountability (e.g., global cost budgeting; public reporting to policy-makers, public or private purchasers, oversight organizations, or entities like accountable care organizations and *Aligning Forces for Quality*).

Thus, given the range of uses for the information, multiple types of measures are needed. Some already exist; others can be developed based on existing data; and still others demand new measures as well as a new culture of collaboration, openness, and trust so that stakeholders know the data will be used for their intended purposes. Each measurement endeavor, though, has different goals and faces different challenges and conceptual difficulties.

Measurement tools for cost do exist. These tools include standardized metrics and measure trends reasonably well. They accomplish what they were designed to accomplish. They are actuarial cost models that allow reasonable estimates to predict the future, are population-based, and allow adjustments for demographics and patient risk. But these tools are limited in what they can do, in that they do not match at all with health professional or plan quality metrics, and they treat diseases and treatments as stand-alone events rather than within the context of a whole person. In short, we are still missing "person-centric" spending tools.[14]

Each measurement goal (choice, negotiation, accountability) should ideally help lead toward more efficient health care, helping fulfill one of the Institute of Medicine's six domains of quality.[15] It is important to note that efficiency does not necessarily mean lower costs, nor does it necessarily mean lower overall health care spending. In fact, more efficient use of resources may very likely lead to higher episode costs and higher spending but also, importantly, to improved quality of life—an essential goal of the health care system. This result of the drive toward efficiency could obviously have wide economic, societal, and political implications—but we cannot understand the impact of efforts to improve efficiency if we do not measure them.

Is Measurement Analogous with Reporting?

In health care quality, measurement of clinical or other data often goes hand in hand with public reporting of those data—but not always.

Many describe public reporting to be like shining a light on the often opaque world of clinical medicine. Advocates for public reporting assert that the public has a right to know as much information as possible, and that withholding that information has an infantilizing effect on the public.

However, this point is a matter of some debate. Some health care providers counter that the public is not prepared to understand certain clinical quality measures and that their public reporting would discourage providers from being truthful in data collection. Yet the collection of these data is still considered useful for internal quality improvement purposes—that is, providers can use them to track their own performance over time.

Therefore, there is an ongoing tension between the desire to measure clinical data for public reporting and the desire to use them to improve quality while not publicly reporting them. There is a similar tension between measurement and reporting of cost and spending data.

Consumers need price information—but by and large do not need cost information. In fact, cost information is likely extraneous information to them and the public release of that cost information specifically for consumers may paradoxically have unintended deleterious or frustrating consequences with respect to those consumers.[16] But other stakeholders (e.g., purchasers) do need cost information at least as much as, if not more than, price information, in order to negotiate with providers and to encourage accountability. A public release of that cost information targeted for purchasers, for instance, may be extremely useful for and well received by that audience.

Thus, cost and spending information should be measured rigorously. But the question of whether cost and spending (as opposed to price) information should be routinely publicly reported and for whom is less settled. It is much more important that consumers have access to accurate, well-presented, easily understandable price information than cost information. Public reporting and availability of price information to support decision-making is crucial. Wide public availability, however, of cost information is of secondary and limited value to consumers. Other key actors, like purchasers, could use cost information. Therefore, efforts to disseminate cost information might be more effective if targeted for purchaser, as opposed to consumer audiences. Measurement of the various price, cost, and spending information can logically lead to routine wide public reporting, but not necessarily. Further, public reporting efforts should consider carefully both the intended use of and audience for the given price, cost, or spending information.

Purchasers of Care

Health plans and employers need comparative data on price in order to negotiate on it. Because these data are not available in most instances, and because plans and employers are interested in accountability as well as negotiation, many plans and employers are interested in provider costs instead of or in addition to price. Yet many of these cost data are also unavailable to health plans and purchasers. In fact, some hospitals do a poor job of tracking their own unit costs and thus are unable to report them with any degree of accuracy. While some hospitals may have a handle on some of their costs, they usually lack systems to track them in ways that are clinically meaningful and facilitate managing for value. Many physicians and other health care professionals lack the systems to accurately identify the cost associated with an individual office visit, let alone an episode composed of multiple office visits to multiple health care professionals.

Understanding and setting unit costs in health care is so divorced from reality that attempting to rationalize cost in one area is like pushing on a balloon: the surface is depressed in one area, but the amount of air doesn't change and the balloon just expands elsewhere.

Thus, purchasers of care would benefit from the development of cost measures for purposes of negotiation. Measuring cost for the purpose of negotiation is a difficult task because, much as with price measures for choice, cost measures for negotiation can conceivably be created along discrete service lines but are difficult to create across the panoply of needs that a patient is likely to have.

Additional development and use of episode-of-care cost or spending measures beyond the current episode groupers, for instance, would be helpful to aid negotiation. Ideally, these measures should be open source, meaning that they would be widely available and used. Further, once constructed, these measures should also be transparent to all stakeholders. Importantly, though, episode-of-care measures require, at a minimum, transparency of the key, real underlying costs and allowed amounts. Unfortunately, those who currently hold the critically important data regarding underlying costs and allowed amounts—providers and health plans—have so far in most instances resisted the release of that information.

In addition to negotiation, employers and other purchasers of care also are interested in accountability measures. Accountability—the desire to hold providers responsible for the quality and efficiency of care they provide—is a prime driver behind health reform efforts. Many purchasers are participating in multiple initiatives that are seeking to hold the health care system as a whole accountable for care spending. In addition, other initiatives such as *Aligning Forces for Quality* are also explicitly and heavily encouraging purchaser participation, and would be aided by accountability measures.

Why Charges Don't Tell Us Anything*

Reports of charges—the amount of money a provider would charge absent any discounts—often are used as an interim step to publicly reporting cost information. However, charge reporting is flawed at best and at worst misleading, because it is unrelated to actual payments.

Charges are based on aggregate data for estimating costs. They also are sometimes based on the assumption that every billable health care event in a given department has the same profit margin. This assumption, though, is obviously not the case. However, because charges are comparatively easy to collect and publicly report (in part because Medicare data on charges are publicly available), charge data often are used as a proxy for cost reporting.

In reality, charges billed and reimbursements paid do not reflect cost. The cost of using a resource (e.g., a physician, piece of equipment, or area of space) is the same whether it is reimbursed poorly or highly. Cost depends on how much time and supplies are used to care for a patient, not on the reimbursement of that service. Thus, charges do not tell us anything helpful about cost.

* Adapted from Kaplan RS, Porter ME. How to solve the cost crisis in health care. Harv Bus Rev. Sept 2011; 46-64.

Policy-makers

Policy-makers such as legislators, regulatory agencies, and nongovernmental oversight bodies need tools to gauge spending because their role is to hold health care providers and purchasers accountable for their behavior.

One significant initiative to establish accountability in health care spending is the development of Accountable Care Organizations, a payment and delivery reform model enabled under the Affordable Care Act that seeks to tie provider reimbursements to quality metrics and reductions in the total cost of care for an assigned population of patients.

The goal of cost and spending accountability measures is to analyze cost and spending patterns over time and across settings of care in order to identify high-performing plans and providers (and learn from their examples) and low-performing plans and providers (to design interventions for improvement). If premiums rise from one year to the next, it would be useful to know what services were accounting for that—and spending increases could be compared with quality gains. Accountability demands a different set of measures than those consumers and purchasers might use for choice or negotiation, for instance. These accountability measures ideally would assess the impact on cost and spending that happens when multiple clinicians group together or organizations create incentives to coordinate care and hold clinicians accountable for that spending.

One type of accountability measure, community-level cost and spending measures, is of interest to many. These are different measurements, though, than those accountability measures that attempt to assess cost and spending by individual plans, providers, or entities. Community-level measures are useful to policy-makers so they can compare costs and efficiency across geographic regions—so that they can learn, for instance, that a knee surgery costs a certain amount in Nashville, Tenn. and more or less in Memphis, Tenn. Leaders could then adjust policies according to that insight. These community-level measures are, however, of relatively little practical utility to potential users within those communities (e.g., consumers, purchasers). Community-level measurement does not provide information upon which those people can practically act to reduce costs or spending.

Does Efficient Mean Cheap?

Many consumers grow understandably nervous when they are told of efforts to make health care more efficient. Some consumers picture rationing of services, denial of needed care, or other efforts to cut spending by devaluing—even cheapening—care.

But this would be a misrepresentation. Efficiency can be defined as “acting or producing effectively with a minimum of waste, expense or unnecessary effort” or “exhibiting a high ratio of output to input.”[17] Another term for this is eliminating waste.

Health care is considered a highly wasteful system.[18] [19] Thus, the Institute of Medicine (IOM) has declared that efficiency is one of the cornerstones of a high-quality health care system, along with safety, timeliness, effectiveness, equity, and patient-centeredness.[20] Efficiency should never be confused for cheapness, because it’s not about denying necessary care; it’s about making sure that people who need care get the care they need—only the care they need—and that they actually benefit from that care.

Consumers

If they are interested in the financial impact of health care at all, consumers are interested in prices, not in costs—or at least they should be.

Yet to a certain extent, consumers arguably already know the relevant price to them. That is, they know what they pay out-of-pocket (e.g., co-pays). However, this price information is for discrete services (e.g., a CT scan, a prescription medication) rather than for a complete set of services or management of a condition. Further, insurance distorts price or at least the consumer reaction to price. That is because a consumer often pays the same co-pay for a good or service even if he or she chooses a more expensive option. Additionally, the amount of a co-pay can vary greatly depending on the type of health plan the consumer uses, with amounts being unrealistically small for patients in traditional preferred provider plans, much higher in “consumer-directed” plans, and certain services that have value do not require a co-pay at all (e.g., a “free” preventive care visit in a “value-based” insurance plan). The result is that price often takes on an air of fiction to consumers; the price isn’t “real.” Therefore, there is no need to react to it.

There are major barriers to good price measurement and reporting for consumers. There are few usable apples-to-apples comparisons of care price in existence. For instance, a patient needing a knee replacement would have to do a great deal of research to compare prices among health professionals, and would likely encounter so much resistance and unusable information that the results of the research are likely to be meaningless. In fact, a major initiative would be necessary to standardize consumer-centric pricing to enable broad consumer choice based on price. The development of episode-of-care measures (see Page 13) may be helpful to develop these prices, but even these measures are not yet immediately or widely available.

Unfortunately, though, the problem is even worse. Insurance distorts the meaning and importance of price information to insured consumers. Further, many consumers are not properly prepared to understand—let alone make decisions based on—price information. In fact, consumers simply may not be ready yet to use these data at all. Although most current research has for the most part only examined consumer reactions to health care costs or resource use rather than price or out-of-pocket cost, that research does raise important concerns regarding consumer readiness or willingness to use this type of information. These studies show that consumers often equate higher cost with higher quality when only given cost data, even though the exact opposite (i.e., higher cost may mean poorer quality) is often the case.[21] However, this last observation does not negate the need for price transparency. Instead, it demonstrates that price transparency carries a necessary educational component. Again, whether consumers like it or not, many will be increasingly forced to make decisions based on price as well as quality. It is unreasonable and unfair to ask them to do so in a price information vacuum.

In fact, consumers should be encouraged to consider price when making purchasing decisions, but that consumer consideration should be just one of many factors. Other factors should include clinical quality, convenience (i.e., proximity, timeliness), and non-quantifiable personal values (e.g., a hospital's religious affiliation). As with every spending decision, consumers make choices based on a variety of considerations, and a rich and varied marketplace can cater to a variety of consumers, each of whom has different preferences. Price, however, must be one factor to consider, and the health care system owes it to consumers to give them good information so they can consider that factor fairly.

However, market research has demonstrated that consumers today are highly suspicious of efforts to achieve efficiency and value, and in fact associate the very word "value" with low quality. Consumers are reluctant to associate cost in any way with care, and when forced to do so often consider higher cost to be a proxy for higher quality.[22] Thus, any serious measurement and reporting effort built to enable choice must distinguish between cost and price and must engage consumers with a sophisticated public education campaign.

Do We Really Need Price Measurement?

In our economy most prices are transparent. If a driver wants to buy a gallon of gasoline, the price per gallon is advertised on a sign on the highway, so the driver knows exactly what he or she is paying.

Health care prices are less transparent. But they are not invisible. For example, many consumers know that a physician office visit will cost a $50 co-pay and that filling a prescription for a medication costs $25 (or $15 for the generic equivalent).

To an insured consumer, the price is the co-payment and, in some cases, the deductible expense—that is, what he or she spends out-of-pocket on care. These prices tend not to change no matter what provider the consumer uses, although there is an exception under "tiered" insurance arrangements. This point is the "distorting" effect of insurance—that a consumer's price is either known or is fundamentally knowable, but is nevertheless irrelevant because prices usually do not vary. Thus, for those with health insurance, price information definitely exists that could inform consumers—even if that information is at times opaque and difficult to discern or appreciate at the time of the transaction. That out-of-pocket price information certainly could be measured and presented in ways that would enhance consumer decision-making.

For uninsured consumers or consumers who are covered under high-deductible health plans (e.g., "consumer-directed" plans), the picture is fuzzier. A physician office visit likely has a usual price that the consumer can learn when making an appointment, but most other health care transactions do not have a fixed price associated with them. An uninsured patient who needs a colonoscopy, for instance, would have a hard time estimating his out-of-pocket expense before the procedure. Prices matter greatly to these patients. Unfortunately, because there exists no "bundled payment" way to estimate prices, these consumers still would be shopping for care on a per-treatment basis, not on an episode-based or person-based mechanism.

Developments in Measurement

Today, price, cost, and spending measurements are in their relative infancy. Yet significant work is being done to advance these, and the state of the science is improving. Innovative initiatives include:

- ***Aligning Forces for Quality***

  Aligning Forces for Quality is RWJF's signature effort to lift the overall quality and improve the value of health care in targeted communities.[23] The Foundation's commitment to improve health care in 16 communities is the largest effort of its kind ever undertaken by a U.S. philanthropy. While much of *Aligning Forces*' initial work has focused on clinical quality improvement, several of these communities are now working to improve cost and spending of care in those markets as well. As part of that effort, those communities are working to report cost, resource use, and efficiency measures. They are starting with reporting basic charge information, usually based on Medicare or, in some cases, "all-payer" claims databases.

  In addition, all 16 *Aligning Forces* communities have identified specific community quality and cost and spending goals. These include goals such as reducing 30-day readmissions to hospitals for heart attack and heart failure; reducing preventable hospital admissions for heart failure; and reducing emergency department utilization. So far, achievement of these goals often is measured by resource use (e.g., reducing 30-day readmissions for heart failure patients by 10 percent), which is associated with an assumed rather than measured cost savings. That means that these goals are using a measure of cost by proxy rather than actual measures of cost. This groundbreaking community work demonstrates some of the practical difficulties and the complexity in measuring cost. Some communities are reporting this information to the public. For instance, in Seattle, the Puget Sound Health Alliance has released a report on resource utilization for high-volume hospitalizations. The report was created by analyzing data for highly utilized hospital services, and indicators such as length of stay, medical tests, and examinations. The report examines resource use through two lenses—intensity and appropriateness—and paints a picture of the value of such care in the Puget Sound region.[24]

  Additionally, several *Aligning Forces* communities are hosting cost "convenings" in which community stakeholders (e.g., health plans, providers, purchasers, consumer advocates) gather to discuss whether and and how to measure and report information.

- **State of Massachusetts**

  Massachusetts is known for its universal coverage, which it achieved via an individual mandate. But it is also the first state to rigorously analyze cost data from the state's private and public health care payers, providers, and acute care hospitals. The data collection and public reporting is pursuant to a 2008 law[25] enacted to promote cost containment, transparency and efficiency in the health care delivery system.

  Under the law, the state's Division of Health Care Finance and Policy holds an annual public hearing based on the collected data. The hearings are intended to focus not only on costs and cost trends, but the factors that contribute to cost growth within the health care system and the relationship between provider costs and payer premium rates.[26] The attorney general may require testimony under oath and has previously released her own report, coinciding with the division's reports. The attorney general reports have drawn conclusions about trends in payment and health care costs. The most recent attorney general report, released in the summer of 2011, recommended giving consumers more options to make value-based purchasing decisions through tiered and limited network health plans. The report also recommended institution of temporary cost controls to reduce variation in payment for comparable services until tiered and limited network health plans are functional.[27]

- **Federal efforts**
  Federal law including the Affordable Care Act mandates several activities that get at payment reform, with an eye toward cost measurement. Interestingly, most of these efforts focus on resource use. These federal measurement efforts do not parse the many issues regarding price, cost, or spending. These efforts also presumably, for the most part, manage cost measurement with an accountability purpose or to enhance payment strategies. They include:
  - The Centers for Medicare & Medicaid Services (CMS) have been phasing in the development of physician resource use reports to provide individual physicians and physician groups with confidential feedback allowing them to compare their resource use with other physicians in their specialty or in their geographic region.[28]
  - CMS is funding development of a publicly available episode-of-care approach for six clinical conditions. (See below for more information on episodes of care.) CMS will use the logic behind the episodes to analyze resource use among physicians, which will be a critical element for Medicare's physician feedback reporting program and for its value-based payment modifier. CMS will ultimately likely use the tool to compare one provider against another and thus identify the most efficient physicians, but not initially base payment from this component.[29]
  - CMS currently is developing a value-based payment modifier that will eventually be applied to Medicare payments under the physician fee schedule, and should result in higher payments for higher quality care. This modifier will apply to some physician payments in 2015 and to all physician payments by 2017.[30]

Development of global payment measures

It is not conceptually or even practically that difficult to understand the price a consumer pays for a given physician office visit, nor is it a stretch for a hospital to understand how much a new piece of equipment costs. However, health care is more than a single event at a fixed point in time or a single new machine. It is a series of events over time, taking place in multiple settings and with multiple providers. So, while the consumer can understand the price of a single physician office visit, if that consumer has diabetes, he or she has a much harder time understanding what the prices will be over the course of a year of managing the disease; and, if he or she has multiple chronic conditions (e.g., diabetes and congestive heart failure), price measurement becomes even more difficult.

There are innovative initiatives and studies that are attempting to rationalize cost measurement as a component of overall health care payment reform. These emphasize episode-based care, which the National Quality Forum defines as a "longitudinal perspective [that] offers a more comprehensive assessment of resource use, including overuse and unnecessary use of services, as well as of the technical quality of the specific services that are delivered."[31] Its chief feature is bundled payments that promote adherence to guidelines, as with Geisinger Health System's ProvenCare package for coronary artery bypass graft and elective percutaneous angioplasty[32] and the PROMETHEUS Payment system's "evidence-informed case rate."[33] The National Quality Forum has developed a significant amount of work, including a measurement framework, around episodes of care.[34]

Bundled payment based on or in the context of an episode-of-care approach is an important development in payment reform. Episode costs or spending, if made public, may also be a good basis for patient and payer choice and negotiation with providers. But they are incomplete in and of themselves, because they measure care as it is delivered. These measures do not get at the appropriateness of the episode, nor do they account for multiple concurrent episodes.

Development of spending measures: Understanding appropriateness

Sometimes, the most appropriate care is the care that never happens in the first place. It has been estimated that the United States spends between one-fifth and one-third of our health care dollars—up to $700 billion a year—on care that does nothing to improve our health.[35] This care not only weighs down our system economically; it also likely harms patients.

This insight has created a strong demand from policy-makers for measures of appropriateness. Episode-of-care measures are insufficient to measure appropriateness, because they measure care for episodes that were delivered, not whether the episode should have been delivered at all (e.g., was the hip replacement surgery needed). The goal of spending and appropriateness measures is to encourage not just efficient spending, but spending on the right thing. (The PROMETHEUS initiative did seek to address appropriateness by differentiating recommended and "typical" costs from potentially avoidable costs.)

Spending measures could be focused on the whole patient, not on that patient's treatment or condition. This type of spending measures could help draw a clear connection between cost measurement and clinical quality measurement. They would measure for clinically meaningful groups. And by doing so, they could also tie cost measurement to population health management. Ideally, spending measures should target specific populations (e.g., a specific ethnic group living in a particular ZIP code) and be able to risk-adjust for comorbidities, as do some measures of clinical quality.

The Robert Wood Johnson Foundation and Cost and Spending Measurement

The Robert Wood Johnson Foundation (RWJF), the nation's largest philanthropy devoted solely to the public's health, has committed to improving cost and spending measurement as part of its focus on improving health care for everyone in America, including how health care is delivered, paid for, and how well it does for patients and their families.

In addition to supporting the *Aligning Forces for Quality* initiative, RWJF is promoting payment reform in a variety of communities across the nation and has supported nascent efforts to measure the cost of care, particularly across episodes of care. Those cost measurement efforts include RWJF support for PROMETHEUS Payment and, previously, for the High-Value Health Care Project with the Brookings Institution.[36] [37] Under the High Value Health Care Project, RWJF worked with the American Board of Medical Specialties Research and Education Foundation to develop measures of the cost of episodes of care.[38]

Getting There from Here

What is the status of cost and spending measurement today?

Current cost measurement tools work, in that they do what they were designed to do. They are, by and large, actuarial cost models—but they do not get at the full spending picture. Episode-based cost measures are helpful to a point, but they are not person-based. That means, for example, these episode-based measures would need to be augmented to account for multiple episodes for a person, or for situations in which services included in an episode are delivered at the same time as services that are not part of an episode (e.g., a person with depression who is also being treated for a broken arm). Current cost and spending measurement tools also do a poor job of measuring results for innovations and interventions such as disease management. There is often no connection between these tools and quality measures. In short, they are site-, service-, episode-, and condition-centric but not "people-centric."

Thus, it is fair to call current measurement efforts nascent, despite unprecedented hard work and collaboration by multiple stakeholders. The totality of initiatives, while well intentioned, do little to inform any actor in the health care marketplace, in part because no "Rosetta Stone" template exists to translate cost data to information for choice, negotiation, and accountability.

What will it take to accelerate cost and spending measurement? The *Aligning Forces* Evaluation Team[39] has identified four stages of community cost measurement: initiation, conceptualization, production, and dissemination.[40] This effort starts with building stakeholder consensus around mutual goals—which can be the hardest part because it involves the setting aside of traditional suspicions and parochial concerns. In fact, some communities may not achieve consensus at all, depending on the purchaser-provider-plan dynamic in a given market.

One big challenge for this effort is to identify the goals of measurement. This question is one that each group trying to measure will have to consider independently. Certainly, it would be nice to devote the enormous amount of needed resources toward the development of a full range of new measurement all at once. That spectrum of new measurement could provide important information for choice, negotiation, and accountability. Unfortunately, time and resources are limited, and that full spectrum approach is probably unrealistic. Thus, many communities will need to choose their measurement goal: choice, negotiation, or accountability—or some realistic, practical mix of those goals. Another key question: what resources are in fact available? Available resources will shape whether the measurement activity is done piecemeal (i.e., with individual measures and indicators) or as part of a comprehensive measurement approach. Everything else—the audience, the types of measures collected, what is done with the measures—flows from those decisions.

Conclusion: Toward a focus on value

Health care's various stakeholders are on a quest to achieve value—which is defined as the relationship between outcome and cost or, more specifically, the health outcome per dollar expended. In a competitive marketplace, the only way to transform health care in ways that drive toward value is to realign competition such that all actors are focused on achieving it.[41]

Value means different things to different stakeholders because, for instance, one entity's cost may likely be another's price. Health care is a $2.7 trillion industry in the United States, comprising 17.7 percent of the gross domestic product.[42] It would be impossible to consider reforming the wide ranging pieces of health care in order to control spending without considering the impact of these reforms on various, disparate participants in the system.

Yet there can be little doubt that health care in the United States is too expensive today—that we spend too much and don't derive better health outcomes as a result of that spending. Our current health care model or approach obviously and demonstrably does not focus on value—and for that reason is arguably unsustainable. The ultimate goal of efforts to transform health care, then, is to give people the various kinds of information they need so they can make the sorts of choices and decisions that, in aggregate, will ideally move health care toward high-quality at a lower overall cost. That is the quest for value.

Measurement alone, of course, won't create value. But it will enable it. Measurement of price, cost, and spending in clear, understandable terms that enables consumers, purchasers, oversight bodies, health care professionals, and health plans to understand the way money interacts with health care is of paramount importance. Done correctly, that measurement will facilitate decision-making, provide a fair point of information for negotiation, and foster accountability. While such measurement will not be easy and is not without some risk, it comes with great rewards. Put simply: without it, we cannot pursue any truly serious effort to put U.S. health care on a path toward high value.

About This Paper

This paper was developed by Michael W. Painter, JD, MD, Senior Program Officer at the Robert Wood Johnson Foundation (RWJF), and Michael E. Chernew, PhD, Professor of Health Care Policy in the Department of Health Care Policy at Harvard Medical School, with assistance from Philip Dunn of Philip Dunn Editorial Services. It is informed by a meeting of national cost experts hosted by RWJF in Washington, D.C., on June 8, 2011.

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Biographies and Meeting Logistics

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Planning Committee Biographies

David Atkins, MD, MPH is the Director of the Quality Enhancement Research Initiative (QUERI) at the US Department of Veterans Affairs. Dr. David Atkins brings outstanding expertise in the field of implementation science to the QUERI program having spent more than a decade at the Agency for Healthcare Research and Quality (AHRQ), where part of his duties included supervising 13 Evidence-based Practice Centers (EPCs) as their Chief Medical Officer. This has given him hands-on experience in negotiating the intersection between research, quality improvement, evidence-based practice, and public policy. Before serving as Chief Medical Officer for the EPCs, Dr. Atkins was the Coordinator for Clinical Preventive Services at AHRQ's Center for Practice Technology Assessment. In that role, he directed an array of programs and research activities relating to clinical preventive services and health promotion, such as directing the work of the U.S. Preventive Services Task Force. Board certified in Internal Medicine, Dr. Atkins also has a Masters of Public Health in Epidemiology. Prior to joining AHRQ, he split his time between the two by conducting epidemiologic research on cardiovascular disease prevention and providing primary care in the ambulatory setting. In addition to several faculty appointments, Dr. Atkins has served on national committees that include the Armed Forces Epidemiology Board, American College of Preventive Medicine's Practice Guidelines Committee, and the American Cancer Society's Detection and Treatment Advisory Group. Dr. Atkins is a member of the editorial board for the *American Journal of Preventive Medicine*, and he has authored nearly 40 articles and/or book chapters and given more than 50 presentations on topics such as improving cancer screening in the primary care setting, assessing outcomes of health promotion and disease prevention, and the science of practice guidelines. Dr. Atkins will lead QUERI as it continues to implement evidence-based innovations that help to improve the health and healthcare of veterans.

Maureen Bisognano is President and Chief Executive Officer of the Institute for Healthcare Improvement (IHI), an independent not-for-profit organization helping to lead the improvement of health care throughout the world. Previously, Maureen served as IHI's Executive Vice President and Chief Operating Officer, leading IHI along with former President and CEO Dr. Donald Berwick for 15 years. She is a prominent authority on improving health care systems, whose expertise has been recognized by her elected membership to the Institute of Medicine of the National Academy of Sciences and by her appointment to the Commonwealth Fund's Commission on a High Performance Health System, among other distinctions. Ms. Bisognano advises health care leaders around the world, is a frequent speaker at major health care conferences on quality improvement, and is a tireless advocate for change. She is also an Instructor of Medicine at Harvard Medical School, a Research Associate in the Division of Social Medicine and Health Inequalities at the Brigham and Women's Hospital, and serves on the Boards of the Commonwealth Fund, the ThedaCare Center for Healthcare Value, and Mayo Clinic Health System-Eau Claire. Prior to joining IHI, Ms. Bisognano was Senior Vice President of the Juran Institute, where she consulted with senior management on the implementation of total quality management in health care settings. Before that, she served as Chief Executive Officer of the Massachusetts Respiratory Hospital in Braintree, MA, where she implemented a hospital-wide strategic plan that improved the quality of care while simultaneously reducing costs. Ms. Bisognano began her career in health care in 1973 as a nurse at Quincy Hospital in Quincy, MA. She held positions of increasing responsibility there, eventually serving as Chief Operating Officer from 1984-1987. She holds a Bachelor of Science degree from the University of the State of New York and a Master of Science degree from Boston University.

Michael E. Chernew, PhD is a Professor of Health Care Policy at Harvard Medical School. Dr. Chernew's research examines several areas related to controlling health care spending growth while maintaining or improving the quality of care. His work on consumer incentives focuses on Value Based Insurance Design

(VBID), which aligns patient cost sharing with clinical value. Several large companies have adopted these approaches and Dr. Chernew's ongoing work includes evaluations and design of such programs. His work on payment reform involves evaluation of bundled payment initiatives, including global payment models that include pay-for-performance components. Related research examines the effects of changes in Medicare Advantage payment rates. Additional research explores the causes and consequences of rising health care spending and geographic variation in spending, spending growth, and quality. Dr. Chernew received his B.A. from the University of Pennsylvania, and his PhD in economics from Stanford University, where his training focused on areas of applied microeconomics and econometrics. He is the Co-Editor of the *American Journal of Managed Care* and Senior Associate Editor of *Health Services Research*. Dr. Chernew has served on the Editorial Boards of *Health Affairs* and *Medical Care Research and Review*. Dr. Chernew is also a Research Associate of the National Bureau of Economic Research. Dr. Chernew is a member of the Medicare Payment Advisory Commission (MedPAC), which is an independent agency established to advise the U.S. Congress on issues affecting the Medicare program. He is also a member of the Congressional Budget Office's Panel of Health Advisors, the Institute of Medicine's Committee on Determination of Essential Health Benefits, and The Commonwealth Foundation's Commission on a High Performance Health Care System. In 2000, 2004 and 2010, he served on technical advisory panels for the Center for Medicare and Medicaid Services (CMS) that reviewed the assumptions used by the Medicare actuaries to assess the financial status of the Medicare trust funds. On the panels, Dr. Chernew focused on the methodology used to project trends in long-term health care cost growth. In 1998, he was awarded the John D. Thompson Prize for Young Investigators by the Association of University Programs in Public Health. In 1999, he received the Alice S. Hersh Young Investigator Award from the Association of Health Services Research. Both of these awards recognize overall contribution to the field of health services research. His 2008 article in Health Affairs "Impact of Decreasing Copayments on Medication Adherence within Disease Management Program" was awarded the Research Award from the National Institute for Health Care Management. In 2010, Dr. Chernew was elected to the Institute of Medicine (IOM) of the National Academy of Sciences.

Secretary Diana S. Dooley, JD was appointed to lead the California Health and Human Services Agency by Governor Jerry Brown. As CHHS Secretary, Dooley will serve as a voting, ex officio member of the newly created California Health Benefit Exchange Board. She will also serve as a member or ex officio member of numerous other boards and commissions: First 5 (California Children and Families) Commission, Cal eConnect (Health Information Exchange) Board, Olmstead Advisory Committee, Alzheimer's Disease and Related Disorders Advisory Committee, Child Welfare Council, Managed Risk Medical Insurance Board, State Council on Developmental Disabilities, Technical Services Board, County Medical Services Program Governing Board, State Mental Health Planning Council, California Workforce Investment Board, San Joaquin Valley Partnership, and the Strategic Growth Council. Prior to leading CHHS, Ms. Dooley was President and Chief Executive Officer of the California Children's Hospital Association, which advocates for children's health on behalf of the eight, non-profit regional children's hospitals in California. These hospitals provide nearly 40 percent of all inpatient care for children in the state. Dooley began her professional career as an analyst at the State Personnel Board. In 1975, she was appointed to the staff of Governor Jerry Brown for whom she served as Legislative Director and Special Assistant until the end of his term in 1983. Before becoming an attorney in 1995, she owned a successful public relations and advertising agency. Dooley left her private law practice in December, 2000 to accept the appointment as General Counsel and Vice President at Children's Hospital Central California near Fresno where she established an in-house legal services program and directed the Hospital's advocacy, communications and governmental relations programs. Dooley is active in civic and community affairs, having served on the Boards of Directors of the UC Merced Foundation, Blood Source of Northern California and The Maddy Institute at California State University, Fresno. She is also a past president of Planned Parenthood, the Visalia Chamber of Commerce and the Central California Futures Institute. Dooley is a native of Hanford, California and graduated from Hanford High School in 1969. She received her bachelor's degree in Social Science from California State University, Fresno in 1972 and her law degree from San Joaquin College of Law in 1995. She is married to Dan Dooley and has two adult daughters.

Julie Gerberding, MD, MPH joined Merck in January 2010 as the president of Merck Vaccines. She is responsible for the commercialization of the current portfolio of vaccines, planning for the introduction of vaccines from the company's robust vaccine pipeline, and accelerating Merck's ongoing efforts to broaden access to its vaccines in the developing world. Before joining Merck, Dr. Gerberding led the Centers for Disease Control and Prevention (CDC) as director from 2002 to 2009. In this position, she was responsible for coordinating more than 40 emergency response initiatives for public health crises including anthrax bioterrorism, SARS, avian influenza, and natural disasters. She also advised governments around the world on urgent public health issues such as AIDS, chronic diseases, and obesity. Dr. Gerberding joined the CDC in 1998 as Director for the Division of Healthcare Quality Promotion at the National Center for Infectious Diseases (NCID) at the CDC. There she developed CDC's patient safety initiatives and other programs to prevent infections, antimicrobial resistance and medical errors in healthcare settings. Dr. Gerberding received her undergraduate degree and her M.D. from Case Western Reserve University in Cleveland, OH. She completed her internship and residency in Internal Medicine and fellowship in Clinical Pharmacology and Infectious Diseases at the University of California, San Francisco (UCSF). As a tenured academician, she worked in a range of clinical, research and teaching roles prior to joining the CDC in 1998. Dr. Gerberding also received her Masters of Public Health at the University of California, Berkeley in 1990. She is a member of the Institute of Medicine and a fellow of the Infectious Diseases Society of America and the American College of Physicians and is board certified in Internal Medicine and Infectious Diseases. She is an Adjunct Associate Professor of Medicine in Infectious Diseases at UCSF. Dr. Gerberding has received more than 50 awards and honors, including the United States Department of Health and Human Services (DHHS) Distinguished Service Award for her leadership in responses to anthrax bioterrorism and the September 11, 2001 attacks. She was named to Forbes Magazine's 100 Most Powerful Women in the world in 2005, 2006, 2007, and 2008 and was named to TIME Magazine's 100 Most Influential People in the World in 2004.

Marge Ginsburg, RN, MPH is Executive Director of the Center for Healthcare Decisions, a nonprofit, nonpartisan organization that seeks the public's perspective on complex health policy issues. Established in 1994 (originally as Sacramento Healthcare Decisions), the Center's primary purpose is advancing healthcare that is fair, affordable and reflects the values of an informed public. Recent work focuses on priorities in healthcare coverage and value-based benefits design. CHCD also assists other states in implementing community engagement activities related to healthcare. She recently served on the Institute of Medicine's Committee for Determining Essential Health Care Benefits and is currently on NCQA's Committee on Performance Measurement and the boards of the Integrated Healthcare Association; Calif. Hospital Assessment & Reporting Task Force (CHART); a panel member of Calif. Technology Assessment Forum; and the Executive Committee of the California Cooperative Healthcare Reporting Initiative and California's Physician Pay-for-Performance program. She received an RN degree from the University of Maryland and a Masters of Public Health from UC Berkeley. Prior to moving to Sacramento in 1990, she spent 15 years administering community-based geriatric services at the Institute on Aging in San Francisco. Before that, she did lots of other stuff.

Kate Goodrich, MD joined the Center for Medicare and Medicaid Services in September of 2011 where she serves as a senior technical advisor to the Director of the Office of Clinical Standards and Quality and Chief Medical Officer of CMS. In this role, she provides leadership on quality measurement programs and oversees an HHS-wide effort to align measures across programs and with the private sector. Prior to coming to CMS, Dr. Goodrich served as a Medical Officer in the office of the Assistant Secretary for Planning and Evaluation (ASPE). She managed the portfolio of ASPE Comparative Effectiveness Research (CER) projects, including the creation of a multi-payer claims database for CER. She was also the project manager for the HHS contract with the National Quality Forum. Kate received her M.D. from Louisiana State University Medical Center in Shreveport, LA in 1995. She then moved to Washington, D.C. and completed her residency in Internal Medicine at George Washington University Medical Center whereupon she joined the faculty of GWUMC as a hospitalist in the Department of Medicine. A new Division of Hospital Medicine was created in 2005, and Dr. Goodrich was appointed Division Director. From 2005 to 2008 she expanded this division to 9 full time hospitalists and started a Physician's Assistant hospitalist program. She also served as Chair of the Institutional Review Board at GWUMC for 5 years. Dr. Goodrich is a graduate of the Robert Wood Johnson Clinical Scholars Program at Yale University where she received training in health services research and health policy. She continues to practice clinical medicine as a hospitalist and assistant professor of medicine at George Washington University Hospital.

George J. Isham, MD, MS is Senior Advisor at HealthPartners and Senior Fellow at HealthPartners Research Foundation. As Senior Advisor, Dr. Isham is responsible for working with the board of directors and the senior management team of HealthPartners on health and quality of care improvement for patients, members and the community. As Senor Fellow at the HealthPartners Research Foundation, he is responsible for facilitating forward progress at the intersection of population health research and public policy. Dr. Isham was a founding board member of the Institute for Clinical Systems Improvement, a collaborative of Twin Cities medical groups and health plans that is improving triple aim outcomes and implementing clinical practice guidelines in Minnesota. Dr. Isham provides leadership to other care delivery systems through service on the board of directors for Presbyterian Health Services in Albuquerque, NM and the External Advisory board of the Marshfield Clinic in Marshfield, WI. Dr. Isham is also a board member for Presbyterian Health Plan also in Albuquerque, NM. Dr. Isham is active nationally and currently co-chairs the National Quality Forum convened Measurement Application Partnership, chairs the National Committee for Quality Assurances' clinical program committee and a is member of NCQA's committee on performance measurement. He is also chair of the Center for Medicare and Medicaid Services' Technical Expert Panel on the National Impact Assessment of CMS Quality Measures and a member of the Agency for Healthcare Quality's National Steering Committee for the Development of Measures of Appropriate Clinical Preventive Services for Older Adults. He is a former member of the Center for Disease Control and Prevention's Task Force on Community Preventive Services and the Agency for Health Care Quality's United States Preventive Services Task Force. He currently serves on the advisory committee to the director of Centers for Disease Control and Prevention. In 2011, Dr. Isham served on a 5-member panel that provided a review of the Public Health Portfolio of the Robert Wood Johnson Foundation and currently serves on the National Advisory Committee for the Robert Wood Johnson funded Aligning Forces for Quality Grant. Dr. Isham was a former member of the board of directors of the American's Health Insurance Plans and a member of the boards of the Alliance of Community Health Plans and the Institute for Clinical and Economic Review at Harvard.

Craig A. Jones, MD is the Director of the Vermont Blueprint for Health, a program established by the State of Vermont, under the leadership of its Governor, Legislature and the bi-partisan Health Care Reform Commission. The Blueprint is intended to guide statewide transformation of the way that healthcare and health services are delivered in Vermont. The program is dedicated to a high value, high quality healthcare system for all Vermonters, with a focus on prevention. Currently, Dr. Jones serves on several committees and workgroups including the Institute of Medicines Consensus Committee on the Learning Healthcare System in America, and the Roundtable on Value and Science Driven Healthcare. Prior to this he was an Assistant Professor in the Department of Pediatrics at the Keck School of Medicine at the University of Southern California, and Director of the Division of Allergy/Immunology and Director of the Allergy/Immunology Residency Training Program in the Department of Pediatrics at the Los Angeles County + University of Southern California (LAC+USC) Medical Center. He was Director, in charge of the design, implementation, and management, of the Breathmobile Program, a program where mobile clinics deliver ongoing care to inner city children in at their schools and at County clinics. This program evolved from community outreach to a more fully integrated Pediatric Disease Management Program for the Los Angeles County Department of Health Services, and has spread to several other communities across the country. He has published papers and abstracts in Pediatric Research, Pediatrics, Journal of Pediatrics, Pediatrics in Review, Journal of Clinical Immunology, Journal of Allergy and Clinical Immunology, Annals of Allergy, Asthma and Immunology, CHEST, and Disease Management. Dr. Jones was an Executive Committee and Board Member for the California Chapter of the Asthma & Allergy Foundation of America, as well the chapter President. He is a past president of the Los Angeles Society of Allergy Asthma & Immunology, and a past President and a member of the Board of Directors for the California Society of Allergy Asthma & Immunology. Dr. Jones received his undergraduate degree at the University of California at San Diego and his MD at the University of Texas Health Science Center in San Antonio, Texas. He completed his internship and residency in pediatrics at LAC + USC Medical Center, where he also completed his fellowship in allergy and clinical immunology.

Peter Margolis, MD, PhD is Professor of Pediatrics and Director of Research at the James M. Anderson Center for Health System Excellence at Cincinnati Children's Hospital Medical Center. His work encompasses the application and study of quality improvement methods in a broad range of areas including primary and sub-specialty care, communities and public health settings to improve the health outcomes of children, families and communities. Dr. Margolis obtained his MD from New York University and his pediatric training at the University of Colorado, where he also served as Chief Resident in Pediatrics. He subsequently spent three years in the National Health Service Corps in Rochester, NY, and Los Angeles, CA before pursuing a fellowship in clinical epidemiology. He was a Robert Wood Johnson Clinical Scholar at the University of North Carolina at Chapel Hill where he also earned his Ph.D. in Epidemiology. In 1994, Dr. Margolis was named a Robert Wood Johnson Generalist Faculty Scholar at UNC where he also served on the faculty between 1991 and 2005. In 2006, Dr. Margolis' joined Cincinnati Children's Hospital Medical Center to create a new center focused on Health Care Quality. Dr. Margolis has worked extensively with the certifying Boards and Specialty Societies to assist them in designing programs that will enable physicians to meet new Maintenance of Certification requirements focused on systems thinking and performance in practice. He also devotes considerable time to teaching quality improvement methods. He is principle investigator of an NIH Roadmap transformative research grant on redesigning systems for chronic illness care.

Leo S. Morales, MD, PhD, is Associate Professor with tenure in the Department of Health Services and the Department of Medicine/Division of General Internal Medicine and Health Services Research at UCLA. He is also a faculty member of the UCLA Chicano Studies Research Center and a Senior Natural Scientist at RAND, Santa Monica, California. Dr. Morales received his M.D. and M.P.H. in Health Services from the University of Washington and his Ph.D. in Policy Studies from the RAND Graduate School. Dr. Morales' research interests include Latino and immigrant health, disparities in healthcare and cross-cultural survey research methods including the application of advanced psychometrics. He is a past recipient of a Robert Wood Johnson Foundation Harold Amos Award and a current recipient of a Robert Wood Johnson Foundation Health Policy Investigator Award and a Russell Sage Foundation Award to study the effects of social assimilation on the health of Mexican immigrants. He is co-Director of the UCLA Resource Center for Minority Aging Research and directs the research methods cores for two federally-funded centers on minority health and health disparities. Dr. Morales is on the editorial board of Health Services Research. In addition to his research and academic activities, Dr. Morales is a practicing general internist at the UCLA Medical Center.

Judy Murphy, RN, FACMI, FHIMSS, FAAN is Deputy National Coordinator for Programs & Policy at the Office of the National Coordinator for Health IT, Department of Health and Human Services in Washington D.C. She is a nurse, who came to the ONC in December of 2011 with more than 25 years of health informatics experience at Aurora Health Care in Wisconsin, an integrated delivery network with 15 hospitals, 120 ambulatory centers, home health agencies and over 30,000 employees. She led their EHR program since 1995, when Aurora was one of the early adopters of health IT. Most recently she was Vice President-EHR Applications, and managed the organization's successful achievement of Stage 1 EHR Meaningful Use, with incentive payments beginning in September 2011. Her informatics interests lie in system implementation methodologies, health IT project management, automated clinical documentation, and the use of technology to support evidence-based practice; she has published and lectured nationally and internationally on these topics. She has a long-standing reputation of patient advocacy and maintaining a "patient-centric" point of view, and approaches her work with unyielding energy as well as dedication, passion, and commitment to the healthcare transformation enabled by technology. Judy has been on the Health IT Standards Committee since its inception in May 2009. On that committee, she co-chaired the Implementation Workgroup, and was a member of the Meaningful Use Workgroup. She has also served on the American Medical Informatics Association (AMIA) Board of Directors and the Health Information and Management Systems Society (HIMSS) Board of Directors. She is a Fellow in the American Academy of Nursing, the American College of Medical Informatics and HIMSS. She received the 2006 HIMSS Nursing Informatics Leadership Award, was named one of the "20 People Who Make Healthcare Better" in 2007 by *HealthLeaders* magazine, and was selected as one of 33 Nursing Informatics' Pioneers to participate in the Nursing Informatics History Project sponsored by AMIA, NLM, AAN, and RWJF.

Samuel R. Nussbaum, MD is Executive Vice President, Clinical Health Policy, and Chief Medical Officer for WellPoint, Inc. He is the key spokesperson and policy advocate for WellPoint. He oversees corporate medical and pharmacy policy to ensure the provision of clinically proven effective care. Dr. Nussbaum collaborates with industry leaders, physicians, hospitals and national policy and health care organizations to shape an agenda for quality, safety and clinical outcomes and to improve patient care for WellPoint's 34 million medical members nationwide. In addition, Dr. Nussbaum works closely with WellPoint business units to advance international and innovative health care services strategy and development. In the decade that Dr. Nussbaum has served as Chief Medical Officer at WellPoint, he has led business units focused on care and disease management and health improvement, clinical pharmacy programs, and provider networks and contracting with accountability for over $100B in health care expenditures. He has been the architect of models that improve quality, safety and affordability, and was instrumental in developing an innovative contracting approach linking hospital reimbursement to quality, safety and clinical performance. In addition, he guided an extensive set of public and private sector partnerships which have improved community health. Under his leadership, WellPoint's HealthCore subsidiary has built partnerships with Federal agencies, including CDC and FDA, and with academic institutions to advance drug safety, comparative effectiveness and outcomes research. Dr. Nussbaum currently serves on the Boards of the National Quality Forum (NQF), the OASIS Institute, and BioCrossroads, an Indiana-based public-private collaboration that advances and invests in the life sciences. Dr. Nussbaum is a Professor of Clinical Medicine at Washington University School of Medicine and serves as adjunct professor at the Olin School of Business, Washington University. Dr. Nussbaum has served as President of the Disease Management Association of America, Chairman of the National Committee for Quality Health Care, as Chair of America's Health Insurance Plan's (AHIP) Chief Medical Officer Leadership Council, as a member of the AHIP Board, and on the Secretary of Health and Human Services Advisory Committee on Genetics, Health, and Society. Dr. Nussbaum received the 2004 Physician Executive Award of Excellence from the American College of Physician Executives and Modern Physician magazine and has been recognized by Modern Healthcare as one of the "50 Most Influential Physician Executives in Healthcare" in 2010 and 2011. Prior to joining WellPoint, Dr. Nussbaum served as executive vice president, Medical Affairs and System Integration, of BJC Health Care, where he led integrated clinical services across the health system and served as President of its medical group. He earned his medical degree from Mount Sinai School of Medicine. He trained in internal medicine at Stanford University Medical Center and Massachusetts General Hospital and in endocrinology and metabolism at Harvard Medical School and Massachusetts General Hospital, where he directed the Endocrine Clinical Group. As a professor at Harvard Medical School, Dr. Nussbaum's research led to new therapies to treat skeletal disorders and new technologies to measure hormones in blood.

Patrick Remington, MD, MPH is the Associate Dean for Public Health and a Professor of Population Health Sciences at the University of Wisconsin School of Medicine and Public Health. Dr. Remington received his undergraduate degree in molecular biology and his medical degree from the University of Wisconsin. After completing an internship at Virginia Mason Hospital in Seattle, he trained at the CDC as an Epidemic Intelligence Service Officer (assigned to the Michigan health department); as a Preventive Medicine Resident in the Division of Nutrition at the CDC, and as part of the CDC Career Development Program, when he obtained his MPH in Epidemiology from the University of Minnesota. He was the Chief Medical Officer for Chronic Disease and Injury Prevention in the Wisconsin Division of Health for almost a decade, and joined the Department of Population Health Sciences in 1997. Dr. Remington's current research examines methods to measure the health outcomes and determinants in populations, as well as health disparities by education, race, or region. In addition, he is examining ways to use this information in community health improvement, such as through the publication of County Health Rankings.

Edward J. Sondik, PhD, is Director of the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS), the Nation's principal health statistics agency responsible for monitoring America's health and health system. The Center is one of the designated statistical agencies of the United States, which together conduct the major statistical programs of the Federal government. In carrying out its mission, NCHS conducts a wide-ranging program of research and analysis in health and vital statistics, epidemiology, and the statistical sciences, all aimed at supporting government and private sector policy development and research. Dr. Sondik also serves as Senior Advisor to the Secretary of the Department of Health and Human Services, providing technical and policy advice on statistical and health information issues. In this capacity he also serves on the HHS Data Council, the body that reviews HHS data policy and related issues. Dr. Sondik is a member of the Interagency Committee on Statistical Policy, along with the leaders of the other designated statistical agencies. Dr. Sondik received BS and MS degrees in Electrical Engineering from the University of Connecticut and a PhD in Electrical Engineering from Stanford University. From 1976 to 1996, he was on the staff of the National Institutes of Health, including a period as Acting Director of the National Cancer Institute. Prior to joining the federal government, he served on the faculty of Stanford University.

David M. Stevens, MD is Director of the Quality Center and Associate Medical Director of the National Association of Community Health Centers (NACHC) and Research Professor in the Department of Health Policy at the George Washington University School of Public Health and Health Services. Before assuming his current positions, Dr. Stevens was senior medical officer for quality improvement in the Agency for Healthcare Research and Quality (AHRQ) and its Center for Quality Improvement and Patient Safety. While at AHRQ he provided major leadership in AHRQ's mission to translate research into action. Major initiatives include a AHRQ/Robert Wood Foundation sponsored learning collaborative to reduce health disparities with nine major national health plans; a care management improvement project with seventeen state Medicaid agencies; a partnership with the CDC to develop interventions for the prevention of type II Diabetes Mellitus; an improvement collaborative with End Stage Renal Disease providers; and contributor to the National Health Quality Reports. Before coming to AHRQ, Dr Stevens as chief medical officer was responsible for national clinical leadership of the Health Resources and Services Administration (HRSA) Community and Migrant Health Center Program and for leadership of the HRSA/Bureau of Primary Health Care initiative on eliminating health disparities in underserved and minority populations. This landmark program, the Health Disparities Collaboratives, transformed preventive and chronic care and generated major positive clinical outcomes as documented in peer reviewed scientific literature. With the CDC and the Institute of Healthcare Improvement, he initiated a landmark pilot demonstration on translating research from the Diabetes Prevention Program into practice. Dr Stevens also established national quality improvement policies for clinical programs in health centers, including the opportunity for JCAHO accreditation. With the CDC, he also implemented a major immunization quality improvement initiative, increasing immunization rates by 50% in 10 states in over 100 health centers, affecting 150,000 underserved infants and children each year. He was a practicing family physician and medical director for ten years at community health centers in the South Bronx and in Brooklyn, New York. Dr. Stevens was a member of an HHS workgroup which completed the HHS Strategic Plan for Asthma and a member of the HHS Work Group on reducing health disparities for diabetes. As a member of the commissioned corps of the US Public Health Service, he received numerous awards, including the commissioned corps meritorious service medal, the DHHS Award for Distinguished Service and the Arthur S. Fleming Award, a private-sector award for outstanding federal employees who have made extraordinary contributions to government.

Thomas B. Valuck, MD, JD is Senior Vice President, Strategic Partnerships, at the National Quality Forum (NQF). Dr. Valuck oversees NQF-convened partnerships—the Measure Applications Partnership (MAP) and the National Priorities Partnership (NPP)—as well as NQF's engagement with states and regional community alliances. These NQF initiatives aim to improve health and healthcare through use of performance information for public reporting, payment incentives, accreditation and certification, and systems improvement. Dr. Valuck comes to NQF from the Centers for Medicare & Medicaid Services (CMS), where he advised senior agency and Department of Health and Human Services leadership regarding Medicare payment and quality of care, particularly value-based purchasing. While at CMS, Dr. Valuck was recognized for his leadership in advancing Medicare's pay-for-performance initiatives, receiving both the 2009 Administrator's Citation and the 2007 Administrator's Achievement Awards. Before joining CMS, Dr. Valuck was the vice president of medical affairs at the University of Kansas Medical Center, where he managed quality improvement, utilization review, risk management, and physician relations. Before that he served on the Senate Health, Education, Labor, and Pensions Committee as a Robert Wood Johnson Health Policy Fellow; the White House Council of Economic Advisers, where he researched and analyzed public and private healthcare financing issues; and at the law firm of Latham & Watkins as an associate, where he practiced regulatory health law. Dr. Valuck has degrees in biological science and medicine from the University of Missouri-Kansas City, a master's degree in health services administration from the University of Kansas, and a law degree from the Georgetown University Law School.

Anne F. Weiss, MPP is a Senior Program Officer and Director of the Robert Wood Johnson Foundation's Quality/Equality Health Care team. Weiss joined the Foundation in 1999, after a distinguished career in health care policy at both the federal and state level. She served as senior assistant commissioner of the New Jersey Department of Health and Senior Services, where she directed the state's oversight of the quality of care delivered by health care providers and health plans, and was also responsible for the state's hospital indigent care programs. During her tenure, the Department of Health and Senior Services worked with physicians and hospitals throughout the state to issue New Jersey's first report card on health care quality. She also served as executive director of New Jersey's blue-ribbon health reform panel, the Essential Health Services Commission, where she directed implementation of a subsidized health benefits program for the working uninsured. Previously, Weiss spent 10 years in Washington, D.C., as professional staff to the United States Senate Committee on Finance and as a senior examiner with the Office of Management and Budget. She also has served as a program analyst in the Office of the Assistant Secretary for Planning and Evaluation, was a member of the steering committee of the National Academy for State Health Policy, and served on the board of the National Association of Health Data Organizations. Born in Detroit, Weiss received her MPP from the Kennedy School of Government, Harvard University, and a BA in history and political science from Wellesley College. Drawn to the Foundation by its high standards for intellectual honesty and its willingness to take risks to improve health care, Weiss believes that the Quality/Equality Health Care team's strategy represents a dramatically new approach in which RWJF will seek to have a "focused impact in a few target communities in which we can bring to bear many of the different strategies the Foundation has tried over the years to really demonstrate an impact on quality of care." She describes this approach as one that seeks to address the inequalities in health care for individuals from specific racial, ethnic, cultural, and socioeconomic backgrounds, increase sustained local collaboration to achieve high-quality health care, create greater transparency about what health care is and what it costs, and devote substantial resources to research, tracking, and evaluation. Weiss and her husband, Michael Livingston, a law professor at Rutgers University School of Law-Camden, live in Elkins Park, Pennsylvania. They have two children.

Nancy J. Wilson, MD, MPH is Senior Advisor to the Director of the Agency for Healthcare Research and Quality (AHRQ) and leads the Agency's work to support and coordinate the ongoing development and implementation of the National Quality Strategy called for by the Affordable Care Act. This includes implementing the Strategy across Health and Human Services agencies and facilitating implementation among public and private sector stakeholders. Dr. Wilson also leads the Agency's efforts to establish a federal-wide Working Group on Health Care Quality charged with collaborating and consulting on the National Quality Strategy; avoiding inefficient duplication of quality improvement efforts and resources; creating a streamlined process for quality reporting and compliance requirements, where practicable; and assessing public and private sector quality effort alignment. Dr. Wilson represents AHRQ on a number of national public/private alliances such as the National Quality Forum (NQF) Board of Directors, the Hospital Quality Alliance, the National Priorities Partnership, and more recently on the NQF Measures Application Partnership

Coordinating Council. She also provides strategic leadership and technical assistance on improvement implementation and data sharing among state Medicaid programs through the AHRQ sponsored Medicaid Medical Director's Network. This Network currently represents 45 states and the District of Columbia . In 2010 they successfully completed their first data sharing project among 16 states on the use of antipsychotic medications in children and adolescents. The subsequent dissemination of the summary report and state specific reports prompted adoption of identified promising program and policy interventions across states throughout the Network. Dr. Wilson is currently leading an AHRQ/CMS collaboration to identify, by January 2012, a core set of quality measures to monitor the health and healthcare of adults eligible for Medicaid. Her work to establish multi-stakeholder community collaboratives to improve healthcare services and population health resulted in Dr. Wilson and her teammates receiving the HHS Hubert H. Humphrey Service to America Award. Prior to joining the Department of Health and Human Services, Dr. Wilson was Vice President and Medical Director for VHA, Inc., a nationwide network of 2,200 leading community-owned health care organizations and their affiliated physicians. Dr. Wilson designed and led nation-wide improvement collaboratives that translated evidence-based practices into improved patient outcomes. For her work raising awareness and orchestrating company-wide efforts in patient safety, Dr. Wilson was awarded VHA's first President's Council Leadership Award. Before joining VHA, Dr. Wilson was Director of the Office of Performance and Quality for the Veterans Health Administration. Among her accomplishments Dr. Wilson designed and implemented a new comprehensive performance management system that 1) aligned VA's vision, mission, and goals with quantifiable strategic objectives; 2) defined measures to track progress in meeting those goals and objectives; and 3) held management accountable for results achieved. During her tenure, performance on process and outcome measures dramatically improved including patient experience of care. For her work she received one of Vice-President Gore's Hammer Awards for Reinventing Government. Dr. Wilson is a 1976 BSN honors graduate of the University of Pittsburgh. She received her MD from Johns Hopkins School of Medicine in 1986 where she also completed her medical internship and residency in 1989. In 1994 she completed a General Medicine/Health Services Research Fellowship at Harvard Medical School while obtaining her MPH in Health Care Management at the Harvard School of Public Health. Dr. Wilson is currently an advisor to the Partnership for Patient Safety, the National Association for Healthcare Quality, and a founding designer and judge for the AHA Quest for Quality Award. She is also a member of several professional societies including the Society of General Internal Medicine, the American College of Physicians, American College of Physician Executives, and the American Public Health Association.

CORE METRICS FOR BETTER CARE, LOWER COSTS, AND BETTER HEALTH

Speaker Biographies

Mary Barton, MD, MPP is Vice President for Performance Measurement at NCQA. In this role, she oversees the team supporting new quality measure development and the upkeep of existing measures in the HEDIS measure set. Prior to coming to NCQA, Dr. Barton was for over five years Scientific Director of the U.S. Preventive Services Task Force (USPSTF) at the Agency for Healthcare Research and Quality (AHRQ). In that role, Dr. Barton's responsibilities included overseeing the evidence reviews prepared for the USPSTF by AHRQ-supported Evidence-based Practice Centers as well as support and oversight of the methodologic and recommendation-making work of USPSTF. Dr. Barton trained in primary care internal medicine at Brigham and Women's Hospital in Boston, and completed a general medicine research fellowship at Harvard. Prior to joining AHRQ, she was an assistant professor at Harvard Medical School, where she performed clinical epidemiology and health services research related to cancer screening and prevention in terms of access, test performance, and outcomes. She is a member of the American College of Physicians and the Society of General Internal Medicine. Dr. Barton received her MD from Harvard University and a master's in public policy from the Kennedy School of Government at Harvard.

Helen Burstin, MD, MPH is the Senior Vice President for Performance Measures of the National Quality Forum, a private, not-for-profit membership organization established in 1999 to develop and implement a national strategy for healthcare quality measurement and reporting. Dr. Burstin joined NQF in January 2007 and is responsible for the NQF consensus development process and the endorsement of performance measures, preferred practices, and frameworks. Prior to joining NQF, Dr. Burstin was the Director of the Center for Primary Care, Prevention, and Clinical Partnerships at the Agency for Healthcare Research and Quality (AHRQ). In her role, she oversaw the development of the Health Information Technology (IT) portfolio which invested over $166 million on research at the intersection of health IT and quality of care. Her center also supported the U.S. Preventive Services Task Force and an extensive body of research on primary care and prevention. Prior to joining AHRQ in 2000, Dr. Burstin was an Assistant Professor at Harvard Medical School and the Director of Quality Measurement at Brigham and Women's Hospital. In her role, she developed a hospital-wide electronic Quality Measurement Reporting System. She also served as the Chair of the Medical Staff Executive Committee on Quality Assurance and Risk Management. Dr. Burstin is a graduate of the State University of New York at Upstate College of Medicine and the Harvard School of Public Health. She spent a year in Washington, DC as National President of the American Medical Student Association. Dr. Burstin completed a residency in primary care internal medicine at Boston City Hospital. After residency, she completed fellowship training in General Internal Medicine and Health Services Research at Brigham and Women's Hospital and Harvard Medical School. Dr. Burstin is the author of over 75 articles and book chapters on patient safety, quality, and disparities. She previously served as a deputy editor of the *Journal of General Internal Medicine*. Dr. Burstin is a member of the Board of Directors of the American Medical Informatics Association (AMIA). She is a Senior Professorial Lecturer in the Department of Health Policy at George Washington University School of Public Health and a Clinical Associate Professor of Medicine at George Washington University School of Medicine. A board certified general internist, Dr. Burstin precepts internal medicine residents at George Washington Medical Faculty Associates.

Carolyn M. Clancy, MD was appointed Director of the Agency for Healthcare Research and Quality (AHRQ) on February 5, 2003, and reappointed on October 9, 2009. Prior to her appointment, Dr. Clancy was Director of AHRQ's Center for Outcomes and Effectiveness Research. Dr. Clancy, a general internist and health services researcher, is a graduate of Boston College and the University of Massachusetts Medical School. Following clinical training in internal medicine, Dr. Clancy was a Henry J. Kaiser Family Foundation Fellow at the University of Pennsylvania. Before joining AHRQ in 1990, she was also an assistant professor in the Department of Internal Medicine at the Medical College of Virginia. Dr. Clancy holds an academic appointment at the George Washington University School of Medicine (Clinical Associate Professor, Department of Medicine) and serves as Senior Associate Editor for the journal *Health Services Research*. She serves on multiple editorial boards, including *Annals of Internal Medicine*, *Annals of Family Medicine*, *American Journal of Medical Quality*, and *Medical Care Research and Review*. Dr. Clancy is a member of the Institute of Medicine and was elected a Master of the American College of Physicians in 2004. In 2009, she was awarded the William B. Graham Prize for Health Services Research. Dr. Clancy's major research interests include improving health care quality and patient safety and reducing disparities in care associated with patients' race, ethnicity, gender, income, and education. As Director of AHRQ, she launched the first annual report to Congress on health care disparities and health care quality. Dr. Clancy lives in the Maryland suburbs of Washington, DC, with her husband, Bill. She enjoys jogging, movies, and spending time with her extended family, especially her four nieces, who live in Virginia.

Michael Dinneen, MD, PhD currently serves as Director, Office of Strategy Management for the Military Health System, a position he assumed after retiring from the USN in January 2005. Following his medical training he served as a staff psychiatrist and then transferred to the National Naval Medical Center where he was first a residency training director, then Chairman of the Department of Psychiatry and finally Director of Medical Services. In the context of a Congressional threat to outsource all military mental health care in the National Capital Area he developed and implemented a strategic plan to reduce psychiatric hospital beds from 200 to 60 while actually increasing the military’s share of the mental health market. Changes resulted in an integrated training and service delivery program with expanded child and adolescent services. Overall operating expenses were reduced by over 30%. While at Bethesda he served as special psychiatric consultant to the Secret Service, the State Department, the Attending Physician to Congress, the National Organization for Victim Assistance, and the Office of the White House Physician. He developed special expertise in psychological trauma and military psychiatry while leading Navy Special Psychiatric Rapid Intervention Teams for over ten years, directing Mental Health Services aboard the Hospital Ship USNS Comfort during Desert Shield/Desert Storm, and treating service members and their families. He has lectured internationally on traumatic stress, developed curricula in trauma psychiatry, and trained personnel for specialized wartime assignments. His publications on psychological trauma include original research on the effects of exposure to deployment stress during Desert Shield and Desert Storm. In 2002, Dr. Dinneen became Director of Healthcare Planning and Tricare Operations at the Navy Bureau of Medicine. He implemented a standard business planning process for the Navy’s 38 Medical Treatment Facilities and was responsible for the orderly transition to the new generation of Tricare Contracts. A diplomat of the American Board of Psychiatry and Neurology, Dr. Dinneen graduated from Harvard University (cum laude) and then received both an MD and PhD Neurochemistry) from the Medical College of Virginia.

T. Bruce Ferguson, Jr., MD was inaugural Chairman of the Department of Cardiovascular Sciences at East Carolina Heart Institute at East Carolina University from 2007-2012. He is a board certified cardiothoracic surgeon who specializes in adult cardiothoracic surgery with a particular emphasis in off-pump surgical revascularization. He came to North Carolina from Louisiana, where he was Chief of Cardiac Surgery at LSU Health Sciences Center in New Orleans, prior to Hurricane Katrina. While in Louisiana, he received funding from the AHRQ’s THQIT program to begin development of a longitudinal cardiovascular information system for the statewide Charity Hospital System population. He served for six years as the Inaugural Chair of the Society of Thoracic Surgeons Council on Quality, Research and Patient Safety, which oversees all aspects of the Society's national database efforts in collaboration with the Duke Clinical Research Institute. He was Principal Investigator on the Society's two clinical trials in quality improvement from 1999 through 2007 funded by AHRQ. This effort also led to the creation of the National Consortium of Clinical Databases (NC^{2}D). He is currently co-Principal Investigator on the combined Duke-ECU Clinical Site for the NHLBI Cardiac Surgical Network. He is a Fellow of the American Heart Association, and a member of the Quality Strategic Directions Committee, the Surgeon Council, and the Informatics Committee for the American College of Cardiology. He is also a member of the Institute of Medicine of the National Academies Committee on the Learning Healthcare System in America. He received a degree in chemistry from Williams College and received his MD degree from Washington University in St. Louis. He completed his training in general and cardiothoracic surgery at Duke University Medical Center. He has been a consultant for Novadaq Technologies, Inc. since 2005, and LifeCell, Inc. since 2011.

Barbara J. Gage, PhD, MPA is a nationally recognized expert in Medicare post-acute and long-term care payment and quality monitoring policies. She leads the performance measurement work at the Brookings Engelberg Center for Health Reform, including efforts for the Quality Alliance Steering Committee, the Long Term Quality Alliance, and performance measurement in the ACO-related work at Brookings. Dr. Gage has directed numerous national studies for CMS and Congress, including the Development of the Continuity Assessment and Record Evaluation (CARE) a standardized set of assessment items for use in the Medicare program, and numerous CMS efforts to develop quality measures for skilled nursing facilities, inpatient rehabilitation hospitals, and long term care hospitals. Dr. Gage also directed the Post Acute Care Payment Reform Demonstration which used the standardized CARE tool to examine patient outcomes and payment incentives associated with the range of acute and PAC services across an episode of care. Additionally, Dr. Gage has lead numerous studies to develop quality of care measures and examine payments and costs for these populations. Dr. Gage has also lead national studies of Medicare's hospice and DME benefits, ACL's (formerly AoA) community-based long-term care systems, and numerous studies of episodes of care, including the identification of related services, quality of care and outcomes, and payment impacts. Her work includes both qualitative and quantitative methods, including interviews, surveys, primary data collection and secondary analysis of claims data, primary data from studies, and survey and certification data.

Stefan Gildemeister has 15 years of experience in conducting health services research and studying health care markets to generate applied policy analysis on health care cost, quality, and access to care. During this time, Mr. Gildemeister has directed research at the Minnesota Department of Health in health system finance, organization and coverage, using primary and secondary data to inform health policy making on a broad portfolio of health policy problems. Mr. Gildemeister has contributed to the state's work to design Minnesota's nation-leading 2008 health reform legislation. He currently directs the Department's critical work to improve market transparency of cost and quality, which relies in important ways on Minnesota's All-Payer Claims Data set. As the State Health Economist and Director of the Health Economics Program, Mr. Gildemeister provides policy advice and analytic guidance to Minnesota's implementation of the federal Affordable Care Act. Mr. Gildemeister holds degrees in economics and economics/business administration from the New School for Social Research, New York, and the University of Bremen, Germany. Over the years, Mr. Gildemeister has consulted on a variety of health policy issues for organizations and academic institutions in Germany and the U.S.

Kevin L. Larsen, MD is the Medical Director of Meaningful Use at the Office of the National Coordinator for Health IT. In that role he is responsible for coordinating the clinical quality measures for Meaningful Use Certification and overseas the development of the Population Health Tool http://projectpophealth.org. Prior to working for the federal government he was Chief Medical Informatics Officer and Associate Medical Director at Hennepin County Medical Center in Minneapolis, Minnesota. He is also an Associate Professor of Medicine at the University of Minnesota. Dr. Larsen graduated from the University of Minnesota Medical School and was a resident and chief medical resident at Hennepin County Medical Center. He is a general internist and teacher in the medical school and residency programs. His research includes health care financing for people living in poverty, computer systems to support clinical decision making, and health literacy. In Minneapolis he was also the Medical Director for the Center for Urban Health, a hospital, community collaboration to eliminate health disparities. He served on a number of state and national committees in informatics, data standards and health IT.

Peter V. Long, PhD, is president and chief executive officer of Blue Shield of California Foundation, a health foundation established in 2002 to ensure access to quality, affordable care for all Californians, and to end domestic violence. Dr. Long has extensive background in health policy working on issues affecting underserved communities at the state, national, and global levels. He has authored papers on a variety of health policy topics including: Medicaid coverage expansion, access to care, and health policy and legislation. Dr. Long's research also covers the social determinants of health, health impact assessments, and community health and development. He is an advisor for the Futures Without Violence task force on children and violence. Dr. Long served in leadership roles at the Henry J. Kaiser Family Foundation and The California Endowment. He also served as executive director of the Indian Health Center of Santa Clara Valley and as a legislative analyst for the National Progressive Primary Health Care Network in Cape Town, South Africa, during the country's transition to democracy. He received his bachelor of arts degree from Harvard University; a master's in health policy from The Johns Hopkins University School of Hygiene and Public Health; and his doctorate in health services from the University of California, Los Angeles. In 2011, Dr. Long was inducted into the UCLA School of Public Health Alumni Hall of Fame. He was also honored by the Insure the Uninsured Project and Santa Clara County Board of Supervisors for his leadership on expanding access to health care for Californians.

J. Michael McGinnis, MD, MPP is a physician, epidemiologist, and long-time contributor to national and international health programs and policy. An elected Member of the Institute of Medicine (IOM) of the National Academies, he has since 2005 also served as IOM Senior Scholar and Executive Director of the IOM Roundtable on Value & Science-Driven Health Care. He previously served as founding Director/Chair, respectively, of the Robert Wood Johnson Foundation's Health Group, the World Bank-European Commission's Task Force for Health Reconstruction in Bosnia, and, in the U.S. government, the Office of Research Integrity, the Nutrition Policy Board, and the Office of Disease Prevention and Health Promotion. In the latter appointment, he carried policy responsibilities for prevention through four Administrations (Presidents Carter, Reagan, Bush, Clinton), during which he conceived and launched a number of initiatives of ongoing policy importance: e.g. the Healthy People national goals and objectives, the U.S. Preventive Services Task Force, the Dietary Guidelines for Americans, development of the Ten Essential Services of Public Health. Earlier he served in India as epidemiologist and State Director of the World Health Organization's Smallpox Eradication Program. Widely published, he has made seminal contributions on the fundamental determinants of health (e.g. "Actual Causes of Death", JAMA 270:18 [1993] and "The Case for More Active Policy Attention to Health Promotion", Health Affairs 21:2 [2002]). He has held visiting or adjunct professorships at George Washington, UCLA, Princeton, and Duke Universities. Dr. McGinnis is a graduate of the University of California at Berkeley, the UCLA School of Medicine, and the John F. Kennedy School of Government at Harvard University, and was the graduating commencement speaker at each.

Eugene C. Nelson, DSc, MPH is a Professor of Community and Family Medicine at The Geisel School of Medicine at Dartmouth and The Dartmouth Institute for Health Policy and Clinical Practice. He serves as the director of Population Health and Measurement at The Dartmouth Institute and at Dartmouth-Hitchcock Health. Dr. Nelson is a national leader in health care improvement and the development and application of measures of quality, system performance, health outcomes, value, and patient and customer perceptions. In the early 1990s, Dr. Nelson and his colleagues at Dartmouth began developing clinical microsystem thinking. His work developing the "clinical value compass" and "whole system measures" to assess health care system performance has made him a well-recognized quality and value measurement expert. He is the recipient of The Joint Commission's Ernest A. Codman award for his work on outcomes measurement in health care. Dr. Nelson has been a pioneer in bringing modern quality improvement thinking into the mainstream of health care; he helped launch the Institute for Healthcare Improvement and served as a founding Board Member. He has authored over 150 publications and is an author of three recent books: (a) *Quality by Design: A Clinical Microsystems Approach*, (b) *Practice-Based Learning and Improvement: A Clinical Improvement Action Guide: Second Edition,* and (c) *Value by Design: Developing Clinical Microsystems to Achieve Organizational Excellence*. He received an AB from Dartmouth College, a MPH from Yale University and a DSc from Harvard University.

Christopher Queram has been the president and chief executive officer of the Wisconsin Collaborative for Healthcare Quality (WCHQ) since November 2005. WCHQ is a voluntary consortium of organizations working to improve the quality and affordability of healthcare, and the health of the population in Wisconsin, through public reporting of comparative performance information, collaborative learning, and sharing of best practices. In addition to his responsibilities with WCHQ, Mr. Queram serves on the boards of the Wisconsin Statewide Health Information Network, Wisconsin Health Information Organization, The Joint Commission, its subsidiary Joint Commission Resources, and Delta Dental of Wisconsin. He is also a member of the AHRQ National Advisory Council, Quality Alliance Steering Committee, AQA Steering Committee, and the editorial advisory group of The Commonwealth Fund publication *Quality Matters*. Mr. Queram previously served as chair of the Purchaser Council, board member with the National Quality Forum (2000–2005), treasurer of The Leapfrog Group (2002–2005), principal of the Hospital Quality Alliance (2003-2011), and board chair of the National Business Coalition on Health (1998–2000). He was a member of three Institute of Medicine committees: the Committee on Redesigning the National Healthcare Quality and Disparities Reports; Committee on Redesigning Health Insurance Benefits, Payment and Performance Improvement Programs; and Committee on the Consequences of Un-insurance. He also served on President Clinton's Advisory Commission on Consumer Protection and Quality in the Health Care Industry. Prior to his current position, Mr. Queram was the chief executive officer of the Employer Health Care Alliance Cooperative in Madison, Wisconsin and also previously served as a hospital executive in both Madison and Milwaukee, Wisconsin. Mr. Queram holds a master's degree in health services administration from the University of Wisconsin at Madison.

Carole Romm, MPA, RN is a healthcare consultant who helps organizations develop systems to advance care for Medicaid and other underserved populations. She is currently directing Oregon's accountability and quality efforts as it reforms healthcare for its Medicaid population through transformation of the delivery system. Prior to her role with the state of Oregon, Ms. Romm was Public Affairs Director at Central City Concern, an agency serving homeless adults in Portland Oregon. She also co-chaired Oregon's Medicaid Advisory commission and served on a number of state committees developing the framework for Oregon's health reform initiative. Previously, Ms. Romm was the Health Services Director at CareOregon, Oregon's largest Medicaid managed care plan. In 2000, Ms. Romm was awarded a three-year Robert Wood Johnson Foundation Nurse Executive Fellowship. In the past, she has held leadership roles with the RWJ Foundation Executive Nurse Fellowship Alumni Association Board of Directors, the Oregon Health Services Commission, and the Oregon Primary Care Association.

She earned a baccalaureate in labor relations at Cornell University, a nursing degree from Portland Community Commission College, and a masters in public administration (MPA) from Portland State University.

Dennis P. Scanlon, PhD is a Professor of Health Policy and Administration at the Pennsylvania State University. Dr. Scanlon's research focuses on health systems improvement, including the role of information, incentives and behavior change for improving health care outcomes. Research topics include quality measurement and transparency, competition in health insurance and health provider markets, public and private sector health care purchasing activities, and the impact of information and incentives in health care markets. He has led a federally-funded research project examining the state of quality improvement activities at managed care plans, as well as projects examining the impact and cost-effectiveness of diabetes and disease management programs in Federally Qualified Health Centers (FQHCs) and was principal investigator for the evaluation of The Commonwealth Fund's Evaluating the State Action to Avoid Rehospitalizations (STAAR) Initiative. He is currently the principal investigator for the evaluation of the Robert Wood Johnson Foundation's Aligning Forces for Quality initiative and is participating in their AHRQ funded investigation, "Assessing a Statewide Multi-stakeholder Chronic Care Model Implementation". In addition to his research activities, he is also the professor in charge of the doctoral program in Health Policy and Administration. Dr. Scanlon is frequently invited to speak and testify to a variety of policy and practice groups.

Matthew C. Stiefel directs the Center for Population Health in Kaiser Permanente's Care Management Institute. He was a 2008-09 fellow with the Institute for Healthcare Improvement, and continues as a faculty member for the IHI Triple Aim. Matt joined KP in 1981 as a medical economist, and later held management positions in KP Northwest, directing planning, marketing, and medical economics. He joined the Care Management Institute as the director of measurement in 1998 and became the associate director of CMI in 2000. Prior to KP, he served as a policy analyst on the Carter Administration Domestic Policy Staff and in the US Department of Health, Education and Welfare, and as a local health planner in the San Francisco bay area. He recently completed coursework toward an MS in epidemiology from the Harvard School of Public Health, holds an MPA from the Wharton School, and a BA in psychology from Stanford. Matt has been married to Jean Henderson for 33 years, has two grown children, Julia and Oliver, and a brand new daughter-in-law, Hillary.

Steven M. Teutsch, MD, MPH is the Chief Science Officer, Los Angeles County Public Health where he works on evidence-based public health and policy. From 1997-2009 he was with the Outcomes Research and Management program at Merck where he was responsible for scientific leadership in developing evidence-based clinical management programs, conducting outcomes research studies, and improving outcomes measurement to enhance quality of care. He worked at CDC from 1977 to 2007. Most recently he was Director of the Division of Prevention Research and Analytic Methods (DPRAM) where he was responsible for assessing the effectiveness, safety, and the cost-effectiveness of disease and injury prevention strategies. DPRAM developed methodology for studies of the effectiveness and economic impact of prevention programs, provided training in these methods, developed CDC's capacity for conducting studies, and provided technical assistance for conducting economic and decision analysis. The Division also evaluated the impact of interventions in urban areas, developed the *Guide to Community Preventive Services*, and provided support for CDC's analytic methods. He has served as a member of that Task Force and the U.S. Preventive Services Task Force which develops the *Guide to Clinical Preventive Services* as well as on Americas Health Information Community Personalized Health Care Workgroup and the Evaluation of Genomic Applications in Prevention and Practice (EGAPP) Workgroup. He chaired the Secretary's Advisory Committee on Genetics Health and Society, and served on IOM panels, Medicare's Evidence Development and Coverage Advisory Committee, and on several subcommittees of the Secretary's Advisory Committee on Healthy People 2020. At CDC, he was assigned as an EIS Officer to the Parasitic Diseases Division and worked extensively on toxoplasmosis. He then worked in the Kidney Donor and subsequently the Kidney Disease Program. He developed the framework for CDC's diabetes control program. He joined the Epidemiology Program Office and became the Director of the Division of Surveillance and Epidemiology where he was responsible for coordinating CDC's disease monitoring activities. He became Chief of the Prevention Effectiveness Activity in 1992. Dr. Teutsch was born in Salt Lake City, Utah. He received his undergraduate degree in biochemical sciences at Harvard Collee in 1970, an M.P.H. in epidemiology from the University of North Carolina in 1973, and his M.D. from Duke University in 1974. He completed an internal medicine residency at Pennsylvania State University, Hershey. He was certified by the American Board of Internal Medicine in 1977, the American Board of Preventive Medicine in 1995, and is a Fellow of the American College of Physicians, American College of Preventive Medicine, and the American College of Epidemiology. Dr. Teutsch is an Adjunct Professor at the Emory University School of Public Health and U. No. Carolina School of Public Health. Dr. Teutsch has published over 190 articles and 8 books in a broad range of fields in epidemiology, including parasitic diseases, diabetes, technology assessment, health services research, and surveillance.

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

IOM Workshop on Core Metrics for Better Care, Lower Costs, and Better Outcomes
Workshop Logistics
The Beckman Center of The National Academies
100 Academy, Irvine, CA 92617
Huntington Room
December 5 - 6, 2012

The Roundtable on Value & Science-Driven Health Care is looking forward to your participation on December 5-6, 2012. If you have any questions regarding workshop logistics, please contact our office at jcsanders@nas.edu or 202-334-3889.

LOCATION:
The workshop will begin at **8:300am on December 5th** and will end at **1:00pm on December 6th**. Breakfast will be served on site beginning at **8:00am** on December 5th and December 6th**.** The workshop agenda provides further details, although these times provide an accurate estimation for travel planning purposes. The Beckman Center is located at **100 Academy, Irvine, CA**.

HOTEL ACCOMODATIONS:
Should you require lodging, previous guests have enjoyed their stays at the hotels listed below:

Balboa Bay Club
1221 West Coast Hwy
Newport Beach, CA

Fairmont Newport Beach
4500 MacArthur Blvd.
Newport Beach, CA

Island Hotel Newport Beach
690 Newport Ctr Dr
Newport Beach, CA

Please contact Julia Sanders (jcsanders@nas.edu) with any questions.