Maryland Health Care Commission

Practitioner Performance Measurement Work Group

Briefing Book

Summer 2013

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May 10, 2013

Dear individual/researcher:

The Maryland Health Care Commission (Commission or MHCC) is initiating a practitioner performance measurement project and intends to use its state-mandated database of privately insured health care claims, combined with Medicare and Medicaid claims data, to evaluate and report on physician performance. In order to include Medicare claims in the data used to measure physician performance, the MHCC must obtain Qualified Entity (QE) certification from the Centers for Medicare and Medicaid Services (CMS). Further, in order to include Medicare data in generating performance measures other than the accepted quality measures currently permitted by CMS, the MHCC must use a stakeholder workgroup to define the proposed alternative measures and provide documentation to CMS regarding the testing of any proposed alternative measures.

After obtaining QE certification, the Commission will have one year to make performance measures available to the public. In order to meet the deadline, MHCC plans to limit first year performance measures to a subset of the permitted quality measures. Alternative measures (cost/resource use, efficiency) will be included in performance measures in subsequent years.

The Commission is convening a collaborative workgroup to identify specific primary care and specialty care areas of focus for the development of practitioner performance measures. Performance measures will be specialty specific. The goal for the workgroup members will be to provide scientific and clinical practice perspectives, give input on appropriate peer review practices, and possibly also speak about experience with performance measures reported by other Qualified Entities or other organizations. The Commission is seeking workgroup participation from several of Maryland's largest carriers, the, Maryland Hospital Association, MedChi, Johns Hopkins, University of Maryland, internal medicine and family practice, other physician specialties, the health system research community, as well as the Department of Health and Mental Hygiene and the Health Services Cost Review Commission (HSCRC).

The Commission is issuing this letter to you because you have expressed an interest in or have been nominated by a colleague to participate on this workgroup. Please inform us if you are willing to participate within the next two weeks, if possible, so that we can get the project underway. Please send your response to Valerie Wooding at: valerie.wooding@maryland.gov.

The workgroup will be staffed by Linda Bartnyska, Acting Director of the Center for Analysis and Information Services (linda.bartnyska@maryland.gov), and Janet Ennis (janet.ennis@maryland.gov). Questions about this project should be directed to either Linda or Janet via email.

The essential commitment for workgroup members is to initially attend three monthly meetings, (to commence in late May or early June), followed by subsequent meetings throughout 2013 and beyond, as required. The meetings will most likely be held at the Commission offices in Baltimore. Commission staff also is considering the use of webinars for these work group meetings. In setting the meetings, the utmost priority will be given to accommodating the schedules of the workgroup members. Travel expenses can be reimbursed, pursuant to Maryland state guidelines, for members who come in person from out of state. Commission staff will provide coordination for the meetings, communication regarding agenda and logistics, and respond to requests for information and assistance as needed.

Commission staff looks forward to working with you soon on this important initiative.

Sincerely,

Ben Steffen
Executive Director

EXPANSION OF MARYLAND'S ALL-PAYER CLAIMS DATABASE (APCD)

Linda Bartnyska
Maryland Health Care Commission

March 25, 2013

1

BACKGROUND ON THE MCDB

- MCDB created by the Legislature in 1993
- Required **private carriers** (with ≥ $1 million in premiums) to submit **paid** claims information for **Maryland** residents to the MHCC
- Originally limited to claims for **professional** services (for possible rate-setting)
  - Authority expanded in 1999 to include **prescription drug** claims
  - In 2007, authority expanded to permit collection of **institutional** claims, **eligibility** information, **health plan descriptions**
- Required to issue annual reports on cost & utilization of services

2

CURRENT DATA FLOWS

- Annual **private insurer (MCDB)** data submissions
  - Content for each year set by MHCC, with carrier input
  - 20 Payer Units, representing 11 carriers, submit data
  - Created as of April 30th; due to vendor by June 30th
  - Professional (78.8 million), Institutional (3.7 million), Rx (21.0 million), Eligibility (3.6 million) records
- Other components of our **APCD**
  - Annual **Medicare** data files (eligibility, all service types except Rx)
- Currently sharing **MCDB** data with:
  - Hospital Rate-setting Commission (HSCRC)
  - Maryland Insurance Administration

CURRENT USES

- Legislatively required analyses
  - Increasing every year (e.g., AOB analysis)
  - Professional service utilization (yearly)
- MHCC programs
  - PCMH program functions
    - patient attribution and shared savings
  - Small group market
    - compared to individual market, larger employers, MHIP
- MHCC originated studies
  - Focused research applying recognized research methods to issues of importance to Maryland policymakers and consumers.
    - Medicare admissions for ACSCs: comparisons by race, geographic region, income

NEW APCD INFORMATION NEEDS

- Timely information on per enrollee annual health services use and spending and enrollee health status by
  - Insurance market (including self-insured employers and Medicaid enrollees)
  - Type of plan (including benefit design)
  - Sub-county geographic locations
- For use by MHCC in its role as monitor of annual changes in health care utilization and
  - MIA
  - Health Benefit Exchange
  - DHMH and local health improvement groups
  - MHA

5

APCD EXPANSION PLAN SUMMARY #1

- Annual submission of data to the MCDB will be replaced with quarterly data submissions
  - Will enable the database contractor to identify problems in data submissions and have carriers to resolve data problems sooner
- Define an insurer plan benefit file (from carriers)
  - Information on service benefits, restrictions, and patient out-of-pocket obligations
- Obtain Medicaid MCO claim, enrollment, and plan benefit data
- Obtain "carved out" service claims for enrollees in self-insured employer plans from
  - pharmacy benefit managers
  - behavioral health companies

6

APCD Expansion Plan Summary #2

- Creation of a Master Patient Index (MPI)
  - Private carriers and Medicaid will submit demographic information on enrollees (fully-insured and self-insured) to CRISP, our HIE, which will assign each enrollee an MPI
  - To enable matching of self-insured employer plan enrollees' pharmacy and behavioral health claims with the enrollees' claims for professional and institutional care
  - To enable claims for any enrollee who changes private plans during the year to be combined
- Add the four-digit zip code extension to information submitted by carriers
  - For summarization at sub-zip code level

7

APCD Expansion Plan Summary #3

- Define and create annual summary utilization records for
  - Enrollees in private insurance (including self-insured) by insurance characteristics
  - Enrollees in Medicaid MCOs
- Define and create summary annual utilization data for sub-zip code areas by summing the per enrollee records (across all payers)
  - Will enable identification of neighborhoods with high utilization levels but protect the privacy of individuals
- Convert MHCC's CMS research DUA to state DUA
  - Will permit MHCC to provide CMS data to other State Agencies with secure data management plans
  - Does not include state universities!

8

Qualified Entity Certification Program

QUALIFIED ENTITY CERTIFICATION PROGRAM
FOR MEDICARE DATA

What is the QECP?

The Affordable Care Act of 2010 includes a provision for the Secretary to make available to qualified entities standardized extracts of Medicare claims data under Parts A, B, and D for the purpose of measuring health care provider and supplier performance. The Qualified Entity Certification for Medicare Data Program (QECP) was developed to enable the Centers for Medicare & Medicaid Services (CMS) to certify and monitor qualified entities. The program is part of an initiative to promote transparency and performance improvement in the provision of health care services. Qualified entities (QEs) will receive access to Medicare claims data in order to produce and disseminate to the public CMS-approved reports regarding the performance of providers.

Why is the QECP necessary?

A growing number of entities, such as collaborative measurement organizations, health plans, and provider networks, have conducted a wide range of performance measurement activities and have reported on the performance of providers and suppliers. However, these initiatives have mostly lacked Medicare administrative Fee-for-Service data, and thereby omit one of the largest payer in any given market.

Consumers, health care quality advocates, and providers have expressed a desire to obtain Medicare administrative claims data to supplement their existing data for the purposes of more complete provider and supplier performance evaluation.

The final rule, published in the Federal Register on December 7, 2011, establishes a framework that permits entities that satisfy certain criteria to obtain Medicare data to generate performance reports. The QECP evaluates applicants to ensure that they meet these criteria.

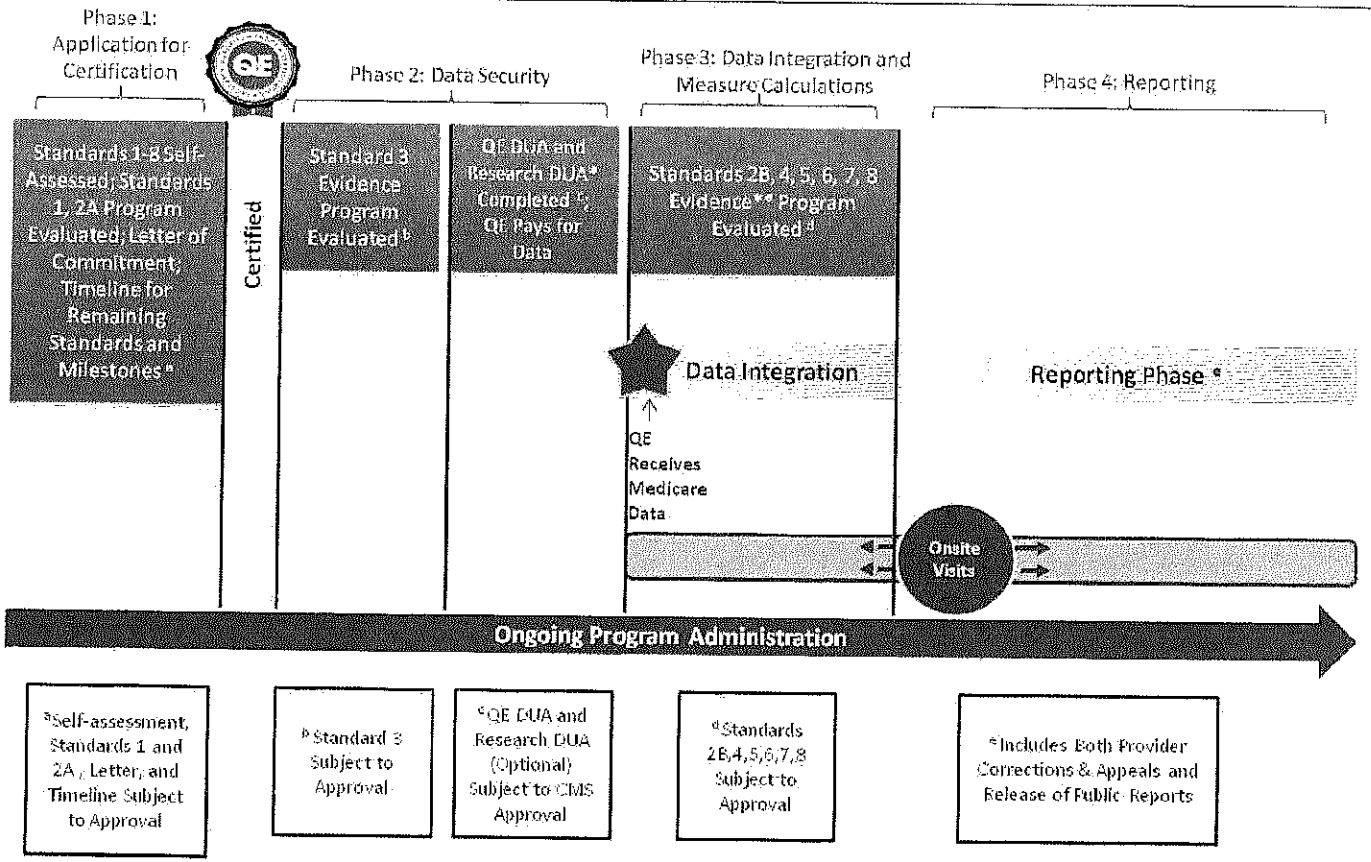
Who can apply to be a qualified entity (QE)?

Any interested entity that wishes to report on the performance of health care providers and suppliers using Medicare data in addition to existing claims data may apply to become a qualified entity (QE). To become a QE, applicants must meet certain criteria; among other requirements, they must demonstrate the following: existing expertise in performance measurement, the ability to combine Medicare data with existing claims data, a process for allowing providers to review and correct their performance reports, and adherence to rigorous data privacy and security procedures. Approved qualified entities may only use the Medicare claims data they receive under this program to report on the performance of health care providers and suppliers.

How to apply

Entities interested in applying to become a QE must submit a registration request. By completing the registration form, entities will gain access to the QECP Operations Manual and the secure QECP Application Web Portal. Interested entities are strongly encouraged to thoroughly review the QECP Operations Manual, which provides a description of the program and the requirements applicants must meet to be certified as a QE and to maintain their QE status. Once registered, entities will be contacted by QECP staff, who will provide support throughout the application process.

QECP Application Process 2012/13: Overview



Black vertical lines represent a phase that must be passed before progressing further in the program.
*The Research DUA is optional, and for those entities who wish to use the QE Medicare Data for purposes in addition to those allowed as part of the QE program. For more information, please see FAQ #14 on the QECP Portal, https://www.qemedicaredata.org.
**The evidence requirements for Standards reviewed during the data integration phase may include a request for updated information demonstrating the success of the data integration and measure calculation.

QUALIFIED ENTITY CERTIFICATION PROGRAM
FOR MEDICARE DATA

The QECP Team

Centers for Medicare & Medicaid Services (CMS) contracted with IMPAQ International, LLC and its partners (the IMPAQ team) to assist in developing, implementing, and managing the QECP.

The team includes:

- **IMPAQ International, LLC (IMPAQ)**, a research organization with demonstrated expertise in performance measurement, program evaluation, handling and processing of Medicare claims, and management of large multi-task CMS projects.
- **National Committee for Quality Assurance (NCQA)**, a recognized leader in health care performance measurement development, implementation, and evaluation, with 20 years of experience helping health care entities define methods for ongoing improvement.
- **NORC at the University of Chicago (NORC)**, a research organization with significant expertise in privacy and data confidentiality, and systems security, with particular experience in Medicare and Medicaid data.
- **Buccaneer Computer Systems & Services (Buccaneer)**, a company highly experienced in data infrastructure, data management, and delivery of CMS data, including the national Medicare and Medicaid research database (Chronic Condition Data Warehouse).

CMS
CENTERS for MEDICARE & MEDICAID SERVICES

IMPAQ
INTERNATIONAL

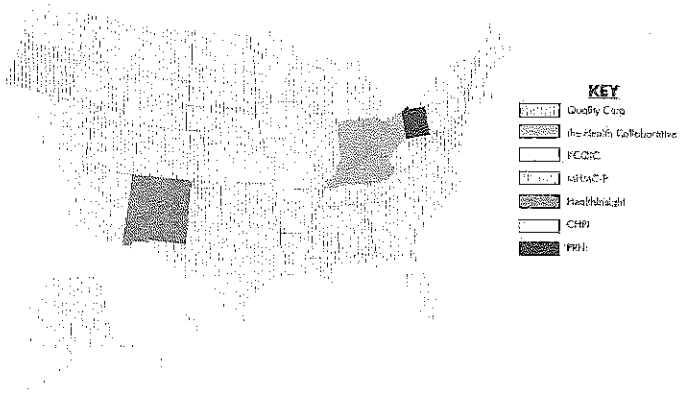
NCQA
National Committee for Quality Assurance

NORC
at the UNIVERSITY of CHICAGO

BUCCANEER
A VANGENT COMPANY

QUALIFIED ENTITY CERTIFICATION PROGRAM
FOR MEDICARE DATA

CERTIFIED QUALIFIED ENTITIES*



Name of Lead Entity	Region(s) in which QE will publicly report provider performance	Date of QE Certification
Oregon Health Care Quality Corporation (Quality Corp)	Oregon	August 31, 2012
Health Improvement Collaborative of Greater Cincinnati (the Health Collaborative)	Ohio Indiana Kentucky	August 31, 2012
Kansas City Quality Improvement Consortium (KCQIC)	Kansas Missouri	September 4, 2012
Maine Health Management Coalition Foundation (MHMC-F)	Maine	November 28, 2012
HealthInsight	New Mexico	January 18, 2013
California Healthcare Performance Information System (CHPI)	California	February 6, 2013
Pittsburgh Regional Health Initiative (PRHI)	Western Pennsylvania	March 27, 2013

* A list of Certified QEs is also available on the CMS Qualified Entity Program website.

Overview of Qualified Entity Certification Program

Sally Turbyville (IMPAQ)
Sr Research Associate - Performance Measurement/
Quality of Care Practice Area Co-Lead

QUALIFIED ENTITY CERTIFICATION PROGRAM
FOR MEDICARE DATA

BACKGROUND AND MOTIVATION

- **What is the QECP?**
  - It is a program to which entities apply to become QEs and maintain QE status
  - Applicants are reviewed against certain criteria
  - Certified entities "QEs" may purchase Medicare claims data
  - QEs use the data to release approved performance reports
- **Why is the QECP necessary?**
  - The final rule establishes a framework that permits entities that satisfy certain criteria to obtain Medicare data to generate performance reports
  - The QECP implements this framework through a certification process: application, evaluation, monitoring and oversight

ACA §10332

CREATING THE SKELETON

Section 10332 of the Patient Protection and Affordable Care Act (ACA) added a new subsection to Section 1874 of the Social Security Act, requiring that the Secretary:

1. Establish a process to allow for the use of standardized extracts of Medicare Parts A, B, and D claims data by Qualified Entities (QEs)
2. who will evaluate and report on the performance of providers of services and suppliers
3. using measures of quality, efficiency, effectiveness, and resource use
4. Defines QEs as public or private entities that are determined by the Secretary to be qualified to use Medicare claims data to make such evaluations of provider/supplier performance
5. agree to meet specific requirements regarding the transparency of their methods and
6. their use and protection of Medicare data.

ACA §10332

CREATING THE SKELETON

6. Requires Medicare claims extracts be combined with other claims data.
7. Specifies the only use of such data and the derived performance information about providers and suppliers be in reports in an aggregate form.
8. Reports must be released and made available to the public,
9. after first making such reports available to any identified provider or supplier and
10. affording an opportunity to appeal and correct errors.
11. Instructs the Secretary to take such actions as she deems necessary to protect the identity of individual beneficiaries, and
12. authorizes her to establish additional requirements that she may specify for QEs to meet, such as ensuring the security of data.

WHY SECTION 10332 IS IMPORTANT:

INCREASES ACCESS TO MEDICARE CLAIMS DATA FOR PERFORMANCE MEASUREMENT

- a major component in our three part strategy of improving care for individuals, achieving better health for populations, and lowering costs through improvement.

CMS' COMMITMENT TO DATA STEWARDSHIP IS IN THE SPOTLIGHT (OR CROSSHAIRS)!!

- protect beneficiary confidentiality
- minimize risk of accidental data disclosure

WHAT SECTION 10332 MEANS FOR ALL OF US:

– Application and Certification Process:
Must be **TRANSPARENT and ROBUST**

– Measures Specification and Reporting:
Must be **VALID and RELIABLE**

– Reports for Providers and the Public:
Must be **UNDERSTANDABLE and ACTIONABLE**

– Appeals Process for Providers:
Must be **FAIR and IMPARTIAL**

Appendix A. Data Dictionary for Standard Measure Selection Workbook

Data Label	Definition
Measure Title	Name of the measure
NQF #	A unique number assigned to a measure once it is submitted to NQF
Description	A brief text description of the measure that includes the type of score, measure focus, target population, or time.
Measure Steward	An individual or organization who is the intellectual property (IP) owner of a measure and is responsible for maintaining the measure
Primary Care/Specialty	
Pharmacy – NQF Data Source	A data source classification that describes if data obtained for measurement is derived from a pharmacy
Updated Date	The date that the measure was last reviewed and updated
Actual/Planned Use	The purpose(s)/use(s) for which the measure is intended
Measure Category	
QECP Standard Measure	Indicates if a measure is a QECP or alternative measure
Discern Recommendation	
Delete	An interactive data field that allows users to mark measures for deletion
Measure Type	A domain of measurement
Level of Analysis	Level(s) at which measurement is assessed
Condition	Conditions or topics intended to be measured
Data Source	Source(s) from which data are obtained for measurement
Care Setting	Settings or services for which the measure applies and is assessed
HEDIS Physician 2013	Indicates if a measure is included in the HEDIS Physician 2013 program
HEDIS Health Plan 2013	Indicates if a measure is included in the HEDIS Health Plan 2013 program
PQRS 2013	Indicates if a measure is included in the PQRS 2013 program
Oregon QE	Indicates if a measure is in use by the Oregon Qualified Entity
ACO Rule	Indicates if a measure is included in the CMS ACO shared savings program
AF4Q	Indicates if a measure is in use by any of the Aligning Forces for Quality alliances
BTE	Indicates if a measure is in use by any of the Bridges to Excellence Care Recognition Programs
In Use	Indicates if a measure is in use by at least 1 of the 7 programs listed

# of Programs	Indicates the number of programs (out of the 7 listed) the measure is included in
# of AF4Qs	Indicates the number of Aligning Forces for Quality alliances using the measure
# of National Initiatives	Indicates the number of national initiatives using the measure. This list of initiatives includes programs that differ from the 7 listed previously

Articles on Performance Measurement

Achieving the Potential of Health Care Performance Measures

Timely Analysis of Immediate Health Policy Issues
May 2013

Robert A. Berenson, Peter J. Pronovost, and Harry P. Krumholz

The United States is on the cusp of a new era, with greater demand for performance information, greater data availability, and a greater willingness to integrate performance information into public policy. This era has immense promise to deliver a learning health care system that encourages collaborative improvements in systems-based care, improves accountability, helps consumers make important choices, and improves quality at an acceptable cost. However, to curtail the possibility of unintended adverse consequences, it is important that we invest in developing sound measures, understand quality measures' strengths and limitations, study the science of quality measurement, and reduce inaccurate inferences about provider performance.

Introduction

There is a consensus that scientifically rigorous and valid measurement of performance can be instrumental in improving value in U.S. health care.[1] In particular clinical areas, such as cardiac and intensive care, measurement has been associated with important improvements in providers' use of evidence-based strategies and patients' health outcomes.[2] Perhaps most important, measures have altered the culture of health care delivery for the better, with a growing acceptance that clinical practice can be objectively assessed and improved. Nevertheless, despite notable successes and the recent cultural change, substantial shortcomings in the quality of U.S. health care persist.[3] Furthermore, the growth of performance measurement has been accompanied by increasing concerns about heterogeneity in the scientific rigor, transparency, and limitations of available measure sets, and how measures should be used to provide proper incentives to improve performance. The challenge ahead is to achieve the promise of measurement while avoiding the potential for unintended adverse consequences.

Many conceptual and operational measurement challenges have become apparent in recent years. The limited scope of available measures, defects in particular measures, and invalid inferences that have been made based on available measures have compromised the potential usefulness of some measurement efforts for consumers, health professionals, and payers. Many individuals and organizations have also expressed concerns about the application of measures in payment policies that do not precisely discriminate differences in quality, leading to misclassification. Standards for measurement and their application for public policy are evolving, with controversies flaring over various technical issues. In an environment where both reputation and dollars depend on measured performance, it is often difficult to disentangle the legitimate concerns of those being measured from self-serving defenses of the status quo.

Despite these concerns, the promotion of public reporting and pay-for-performance is growing, even as a number of studies have shown that some of the most prominent applications of measures in the United States have not met their performance improvement objectives.[4] For example, the largest U.S. test of the combined use of public reporting and pay-for-performance, called the Medicare Premier Hospital Quality Incentive Demonstration, has had little or no impact on the value of care received for important clinical conditions; the demonstration neither reduced patient mortality nor cost growth.[5] Yet, based on face validity of the concept, expectations for success, and perhaps premature claims of cost savings,[6] Congress mandated a Hospital Value-Based Purchasing Program, under which hospital performance is rewarded or penalized with altered marginal payments.

In this paper, we first examine the measurement enterprise, including which organizations develop measures and how payers are using measures in their programs, with a special focus on Medicare, which some contend has been in the lead on using measurement. Next, we summarize the mechanics of

Robert Wood Johnson Foundation
Urban Institute

"In an environment where both reputation and dollars depend on measured performance, it is often difficult to disentangle the legitimate concerns of those being measured from self-serving defenses of the status quo."

performance measurement by reviewing the characteristics of structure, process, and outcome measures, and the data required to calculate these measures. We also review the successes and failures of some current applications of performance measurement, with an emphasis on the lack of success of pay-for-performance approaches and the threat to intrinsic motivation that such an approach represents. Then, we assess the problems inherent in the United States' current reliance on clinical process measures, and explore the substantial challenges of moving to outcome measures.

Based on these findings, we offer seven policy recommendations for achieving the potential of performance measurement. Specifically, we present the case that leaders in the public and private sectors need to:

1. Decisively move from measuring processes to outcomes;
2. Use quality measures strategically, adopting other quality improvement approaches where measures fall short;
3. Measure quality at the level of the organization, rather than the clinician;
4. Measure patient experience with care and patient-reported outcomes as ends in themselves;
5. Use measurement to promote the concept of the rapid-learning health care system;
6. Invest in the "basic science" of measurement development and applications, including an emphasis on anticipating and preventing unintended adverse consequences; and
7. Task a single entity with defining standards for measuring and reporting quality and cost data, similar to the role the Securities and Exchange Commission (SEC) serves for the reporting of corporate financial data, to improve the validity, comparability, and transparency of publicly-reported health care quality data.

The Quality Measurement Enterprise

Measurement is vital to producing a health care system that achieves outstanding results. Without measurement and transparency, clinicians, institutions, patients, and society cannot readily evaluate the value being achieved in the health care system. A commonly quoted aphorism that encourages the measurement movement states, "You can't improve what you don't measure."[i] The United States is about 25 years into efforts to bring performance measurement into medicine.[7] A seminal event in this history was the decision by the Department of Health and Human Services' Centers for Medicare & Medicaid Services (CMS) in 1992 to pivot from having experts review medical records to identify substandard practice in a small number of outlier health care organizations to shift to using standardized quality measurement aimed at understanding whether standard practice across the health care system could be improved.[8] What was novel about this shift was the focus on explicit, objective criteria rather than implicit, subjective expert opinions, and an intention to shift the curve of "mean" performance toward improvement, rather than just focusing attention on the poor performance "tail" of the quality bell curve.

After first briefly trying to rate hospitals based on outcomes, CMS launched an effort to characterize the overall performance of the nation's hospitals, starting with acute myocardial infarction (heart attack) in the Cooperative Cardiovascular Project (CCP). The CCP, which started as a pilot project in four states in the early 1990s and then as a national project a few years later, was the first effort to measure performance uniformly across the country. It was a remarkably ambitious project, requiring the abstraction of more than 200,000 medical records drawn from all the hospitals caring for Medicare patients. The CCP produced vital information that served as the foundation for what became remarkable improvements in cardiovascular care (see appendix for more on the CCP).[9]

Following CMS' Cooperative Cardiovascular Project, the Institute of Medicine released two seminal reports—*To Err is Human* and *Crossing the Quality Chasm*[10]—and researcher Elizabeth McGlynn and colleagues published an influential article documenting

[i] To which others respond, citing a quote incorrectly, but deliciously, attributed to Albert Einstein, "Not everything that can be counted counts, and not everything that counts can be counted." In fact, the quote appears to be from William Bruce Cameron's 1963 book, *Informal Sociology: A Casual Introduction to Sociological Thinking.*

deficiencies in U.S. quality of care when assessed against specific, evidence-based metrics.[11] With awareness of health care quality deficiencies rising, organizations began to focus more on quality: how to define it, how to measure it, how to collect data on it, and how to use those measures to improve it.

While the popularity of performance measurement in health care has grown, its ubiquity is creating challenges for the field. Non-profit and for-profit organizations actively develop and promote measures and measurement systems that vary widely in their rigor and transparency. Some measures' specifications are in the public domain while others' are considered proprietary, with a lack of transparency about how the measures and performance ratings are derived. Some measures are publicly reported, while others are only used internally. Some measures can be used free of charge, while other measure developers require institutions to pay for the right to promote their performance results, and do not have transparent evaluation or an independent endorsement of their methods for determining performance.

Organizations that support measurement. A number of organizations develop and evaluate quality measures, and an even larger number of organizations collect measures for the purpose of evaluating and reporting on the performance of providers. Public measure developers include CMS and the Agency for Healthcare Research and Quality (AHRQ), and non-profit private developers include the Joint Commission and the National Committee for Quality Assurance (NCQA); all use a transparent approach to give the public an opportunity to review and comment on their draft measures, refuse to use proprietary measures, and make transparent their measure scoring mechanisms (see appendix for more on these organizations). Many professional societies also develop measures, such as the American Heart Association, the American College of Cardiology, the Society for Thoracic Surgeons, and the American College of Surgeons, although methods may vary across the organizations. Once developed, quality measures may undergo evaluation by the National Quality Forum (NQF), a public/private, multi-stakeholder organization that endorses general standards for measurement and specific measures themselves after a rigorous and transparent validation process.

Numerous for-profit companies, including Healthgrades and *U.S. News and World Report*, have developed their own measures and use them to grade hospitals and other health care providers. However, most such information brokers use measures not endorsed by NQF, and do not always explicitly disclose the methods by which they rank hospitals. A number of researchers have questioned the validity and reliability of such proprietary "report cards."[12] Understandably, in the absence of transparent measurement standards, the correlation among these various report cards is low. For example, recently none of the 17 top hospitals listed in *U.S. News and World Report*'s "Best Hospitals Honor Roll" were identified as top hospitals by the Joint Commission in their 2010 list of hospitals that received at least a 95 percent composite score on a suite of key quality measures.[13] Proprietary ranking systems likely confuse more than clarify. Findings such as this suggest that the measurement of quality in health care by these private for-profit companies is not aligned with measures in the public domain; it is usually impossible to determine if they are accurate.[14]

In addition to measures developed primarily for public reporting purposes, many measures are also developed for use internally by a practice or facility for quality improvement purposes. Such measures can be constructed quickly by merely running a query in an electronic health record (EHR), or can be more formally specified using more rigorous methods. When used for internal quality improvement purposes and not publically reported on websites, measures need not be held to the same standards as those that are intended to be publicly reported. For example, these measures may have a lower specificity, meaning they result in more "false positive" indications of quality problems. When measures are only used internally to screen for quality issues, false positives are not a concern, since the next step is usually merely to investigate further; such investigation can determine whether, for example, a clinician's suboptimal performance is a reflection on her actions or factors outside of the clinician's control. Also, data for internal use should require less precise risk adjustment and allow for greater timeliness.

While such homegrown measures might be appropriate for internal use, many are being reported on hospital websites and in marketing materials and used to make inferences about the magnitude of quality improvements they may have achieved over a period of time—often without sufficient information to determine their methodology or accuracy. For example, one hospital advertised that it had no infections, without indicating which ones or for how long. Another reported that its quality improvement efforts had saved hundreds of lives, without discussing how the improvements or the saved lives were measured.[15] In short, the public may understandably be confused by

the array of measures that are now promoted in different places.

Despite the broad demand for performance measures and the recognized limitations of current measures, the United States lacks an organization charged with advancing the science of performance measurement, developing standards for performance measures, setting parameters for how accurate the measures must be before they are used in pay-for-performance or public reporting initiatives, and coordinating the development of the large number of measures required to inform patient choice and monitor performance—so that different entities don't develop duplicative yet different measures on the same topic. The closest thing we have to such an entity is NQF, which plays an important role by developing consensus standards for measures and validating measures submitted to it. However, given its mandate, NQF has a limited ability to support the development and pilot-testing of new measures itself or to attest to the accuracy of published measures that are not submitted to the NQF process.

Measuring Structures, Processes, and Outcomes

Avedis Donabedian, an influential leader in the study of health care quality, developed a widely used, three-element model of quality measurement in 1966, which included measuring health care *structures* (the characteristics associated with a health care setting), *processes* (the activities done in a health care setting), and *outcomes* (the results achieved for a patient after a given set of interventions).[16]

Structural measures include requirements imposed by payers and regulators, such as specifications for the physical plant, management systems, board certification, and staffing ratios.

Process measures determine whether evidence-based care guidelines were followed, but do not indicate whether a patient's health actually improved. Process measures, in essence, are used on the assumption that better outcomes should result from evidence-based care processes. Examples of process measures include the rate at which patients experiencing a heart attack are administered aspirin and beta-blockers.

Outcome measures seek to determine whether the desired results are achieved. Examples of clinical outcome measures are whether a patient was readmitted to the hospital within 30 days of discharge and, for some conditions, whether the patient is alive at 30 days after admission.

So-called "intermediate" or "surrogate" outcome measures are those that, while not true outcomes, are assumed to be able to be used as proxies for patient outcomes. For example, hemoglobin A1C blood test results are used both in research and practice as an indicator of whether diabetes is under control, because the results of the test correlate with the likelihood of experiencing diabetes complications. Measuring hemoglobin A1C on a periodic basis is a *process measure,* whereas achieving desirable hemoglobin A1C blood levels is sometimes labeled an *intermediate outcome measure*.

Increasingly, quality experts also include various aspects of patients' experiences as important outcome measures. Examples of patient experience instruments include the Patient Reported Outcomes Measures Information System, which includes modules that address physical health, mental health, and social health; HealthActCHQ, which has developed pediatric quality of life questionnaires, among others; and the Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys developed under the auspices of AHRQ.

Data Sources Used to Calculate Quality Measures

In general, the data needed for determining performance with established measures are obtained through three sources: administrative data, medical records, and patient surveys.

Administrative data are derived mostly from insurance claims and enrollment files. Such data are relatively easy and inexpensive to collect but lack the clinical detail needed to generate many desired measures. Reliance on administrative claims data therefore limits what and how accurately performance can be measured. Determining whether particular services were unnecessarily performed generally requires clinical detail to determine the appropriateness of the service in a particular patient's clinical circumstances—information that is not available from claims forms. For example, without knowing the patient's clinical history, current symptoms, and the results of images of her coronary arteries, it is impossible to determine whether a procedure involving inserting coronary artery stents into partially blocked arteries is appropriate. However, in some cases, the output from measures that use administrative claims have shown a high correlation with output from actual clinical data[17]—although administrative data can vary

substantially in accuracy compared with medical records, which are also far from perfect.

Medical record data provide substantially more detail about the care being provided, the patient's history, condition, and complications, but are substantially less standardized and in many cases less practical. They are also more expensive to use for quality measurement purposes, since they require expert staff to abstract and interpret them to determine if a particular care process was conducted or not. The quality of the data may also be variable, particularly across different sites, practices, or organizations, which has implications for profiling and benchmarking. The widespread adoption of EHRs should make medical record data collection substantially cheaper and easier in the future, although it will not fill all clinical data gaps and may not address problems with data quality. Moreover, it can be difficult to extract data from paper records or EHRs, as there are few common standards for documentation and many terms vary in their meaning. As examples, site-to-site variations in the use of terms (such as "shock") or in the listing of contraindications to clinical strategies can lead to substantial bias in the assessment of performance.

Survey data are typically collected for the purpose of measuring patient experience with care. In the United States, the CAHPS survey is the most well-known of these surveys, and can be fielded among samples of patients by mail, phone, or email. The survey was developed by AHRQ, has been endorsed by NQF, is publicly reported by many health insurance plans, and is widely used by a range of organizations, including NCQA, which requires plans to field the survey to obtain certain types of plan certification, and also certifies survey vendors that organizations can hire to field the CAHPS survey for them. Unfortunately, survey data are expensive to obtain, and their interpretation as a quality measure can be compromised due to site variation in response rates, which can bias results. Initially developed to assess health plan enrollees' experience with their care, there are now CAHPS versions that focus on particular types of providers, including hospitals, doctor's offices, and dialysis facilities, and particular topics, such as the extent to which a provider is using health IT tools or delivering care in accordance with the patient-centered medical home model of care.[18] Efforts are underway to incorporate patient experience measures into public reporting of quality.[19] For example, data collected using the hospital version of the CAHPS survey are now publicly available for all U.S. hospitals on the CMS website.

To generate more robust quality measures, "hybrid" data collection is sometimes required, which refers to the combination of administrative data with information obtained from medical records or patient experience surveys. Such approaches can increase the number of data elements used to generate measure data, reduce the amount of data that must be extracted from medical records, or both.

Primary Uses of Performance Measure Data

In the United States, performance measure data are predominantly used in public reporting and provider incentive programs as well as provider-led quality improvement efforts.

Public Reporting

Measuring and reporting on the quality and cost of care serves several important functions, including: (1) enabling patients to make informed choices about their care and be more involved in medical decision-making; (2) allowing health care professionals to identify areas for improvement and providing them with the motivation to do so; and (3) providing consumers, purchasers, and taxpayers some level of accountability for their substantial expenditures on health care.[20]

While ample evidence exists to demonstrate how publicly reporting the performance of health care providers can spur quality improvements,[21] there is mixed evidence about how well public reporting informs consumer choice.[22] Public reports seem to have negligible impacts on the selection of providers by patients and families or their representatives, primarily because patients are often not aware that the quality information is available, the information provided in public reports is not what they need or value, the information is outdated, the information is not always available when they need it to make a decision, or the information is not presented in an easily understandable way.[23]

Commercial health plans often publicly report provider performance, and sometimes also combine quality measurement data with price and cost information to attempt to categorize providers, especially hospitals, into different value tiers, such that plan members face lower cost-sharing when selecting providers in favored tiers.[24] One of the most ambitious applications of performance measurement is in California, where the Integrated Healthcare Association collaborates with health plans and more than 200 medical groups and independent practice associations to maintain public

reporting and a pay-for-performance program using the Healthcare Effectiveness Data and Information Set (HEDIS), patient experience and satisfaction survey data, and data documenting the adoption and use of health information technology by practitioners.[25] In this context, performance measure data are provided to the public to help reassure them that quality is maintained even though these physicians—who are mainly paid capitated rates per patient by health maintenance organizations (HMOs)—have financial incentives that could result in stinting on care.

Medicare has also been a major producer and user of performance measure data, initially for the purpose of providing information to consumers to help them select providers and health plans. Medicare has used its own administrative datasets and has made extensive use of patient surveys on experience of care.[ii] The *Medicare.gov* website now provides comparative performance information for hospitals, nursing homes, home health agencies, dialysis facilities, Medicare Advantage health plans, and drug plans.[26]

Pay-for-performance

Apart from promoting more informed consumer choice, CMS also uses performance measurement data in a number of its pay-for-performance initiatives, which provide direct financial rewards or penalties to health care providers based on their performance on quality measures. These initiatives include a suite of new "value-based purchasing" programs (Congress's term for pay-for-performance) to reward providers who deliver better performance for beneficiaries at lower cost.[27] Some of these programs include the End-Stage Renal Disease (ESRD) Bundled-Payment and Quality Incentive Program, performance bonuses for Medicare Advantage (MA) plans based on star ratings, the Hospital Value-based Purchasing Program, and the Physician Value-based Payment Modifier.

One of the apparent success stories in the application of measures can be found in Medicare's ESRD Quality Incentive Program; within two years of beginning this program, the majority of dialysis facilities showed significant improvement on the program's three clinical process measures.[28] Facilitating the success was the fact that the measures used to assess dialysis have been shown to be excellent intermediary outcome measures that reliably predict ESRD patient outcomes.[29]

Perhaps the most prominent use of pay-for-performance in Medicare results from the Affordable Care Act's (ACA) new approach to paying quality bonuses to MA plans colloquially referred to as the "Medicare 5 star program." For several years, CMS has posted quality ratings of MA plans online, using a 1 to 5 star scale, to provide beneficiaries additional information to inform their choice of plans. Under the ACA, Medicare now also pays plans differentially based on these star ratings and may limit enrollment in poorly-performing plans.

These quality scores are based on performance measures derived from CMS administrative data, HEDIS measure data provided by plans, and survey data collected directly from beneficiaries using AHRQ's CAHPS survey and CMS' Health of Seniors survey. A recent analysis found a positive association between beneficiary enrollment decisions and the star ratings, suggesting that the performance measures are an important factor in making health plan choices.[30]

Two important issues with the ratings relate to the limits of the measures and the regional variation associated with high-performing plans. First, while the star scale methodology culls from a reasonably broad set of measures, there are gaps in important areas of health plan performance, such as the health plan's performance related to patients with acute, serious health care problems (which are obviously common in the Medicare population). For example, none of the measures relate to whether patients are informed about the advisability of referral outside of the MA plan's provider network for patients with unique clinical circumstances, such as particular cancers best cared for in a specialized cancer center.

A further problem is the skewed geographic distribution of performance. More than half of enrollees in Massachusetts, Oregon, Washington, and Minnesota were in plans with four or five quality stars, whereas in 19 states fewer than two percent of enrollees were in this top tier,[31] implying that health plan quality performance mostly reflects the performance of the local providers who make up the health plan's network. In short, while health plans generally have responded positively to improve their star ratings—for reputation and financial rewards—Medicare beneficiaries are likely getting only a partial picture of the value-added provided by any particular health plan.

[ii] Many of the measures that use administrative claims data have not been validated using measures based on medical record information, with the exception of mortality and readmission measures.

The CMS pay-for-performance approach that is now receiving physician attention is the new Value-Based Payment Modifier, established in the ACA. The assignment of physician value will be used to adjust Medicare payments to physicians based on measured performance on quality and cost starting in 2015. For the numerator of the value-based modifier calculation, CMS will use the measures in its Physician Quality Reporting System (PQRS),[iii] and is working on additional measures to assess their costs—which will make up the denominator in the value formula.

The challenges with producing a composite measure of physician value and implementing pay-for-performance for individual physicians are formidable. For example, family physicians, general practitioners, and internists treat nearly 400 different diagnostic categories, with about 70 categories making up 80 percent of their clinical episodes in a year.[32] Basing a payment modifier on performance on only a few PQRS quality measures will therefore not provide a meaningful assessment of the quality of a clinician's care. Further, the core of what some specialties do presents substantial measurement challenges—for example, we currently do not measure whether a physician made a correct diagnosis. The issues of assigning a cost measure to physicians are similarly difficult, in this case because of the problems of attributing costs generated by many clinicians and institutional providers to a single physician. Using such an approach to determine a physician's value, many physicians will likely be incorrectly assessed, with likely harmful effects on physicians' reputations and the measurement enterprise more broadly – and patients may be misled in choosing physicians.

[iii] Initiated as a voluntary program in 2007, PQRS provides incentive payments to eligible physicians and other practitioners who report quality data. CMS provided a 1 percent incentive payment in 2011, and will provide a 0.5 percent incentive payment in 2012 through 2014, for successfully reporting at least three measures that apply to the services furnished by that professional from a list of more than 200 measures that apply to all specialties. Penalties of up to 1 percent will begin in 2015 for those who do not satisfactorily submit quality data. Fewer than 30 percent of practices currently submit data under the PQRS program (See: Iglehart and Baron, 2012). For medical groups of more than 200 physicians, all 26 of the current NQF-endorsed quality measures for coronary artery disease, diabetes, heart failure, and preventive care services must be reported.

The physician value-based modifier is one of numerous pay-for-performance programs that Congress has mandated. One of the most prominent programs—Hospital Value-based Purchasing—is being launched despite the fact that the demonstration that informed the design of that program—the Premier Hospital Quality Incentive Demonstration Project—did not actually produce better results than comparison hospitals, which also demonstrated improved scores on what were mostly process measures. Indeed, two evaluations found little evidence that the demonstration's use of financial incentives to incentivize improved performance led to reduced mortality rates beyond those achieved with public reporting alone.[33] Various other studies of pay-for-performance for hospitals and physicians have produced mixed results, at best showing small, sometimes temporary, improvements in quality. (See appendix for more details on the evidence base for pay-for-performance.) Further, a few studies have questioned the common reliance on process measures to improve quality for hospital and physician care, although it seems likely that the details—such as the strength of the incentives, the number and selection of performance measures being used, the complexity of the care processes being improved, and restrictions on how bonuses can be used—may affect the success of pay-for-performance programs.[34] The message may be that we have not yet determined how such incentives can be most effectively applied, the extent to which they motivate hospital managers versus physicians, or even if they are sustainably effective in any form over the long run.

Although for some, pay-for-performance is a commonsense approach that would surely work to improve performance if the incentives are large enough,[35] in fact, there are both empirical and theoretical reasons why this approach might actually backfire. The approach has been used in other sectors of the economy without success,[36] perhaps the most visible being in education where the approach is being subjected to increasing criticism.[37]

Under principal-agent theory, the principal (in this case, the payer) offers the agent (a physician, hospital, or accountable care organization) incentives to make maximal effort to act in the principal's interests (i.e., to provide high quality to patients). But, according to one expert's interpretation of the theory, if an agent is expected to devote time and effort to some activity that cannot be measured, then incentive pay cannot be used effectively to encourage activities that *can* be measured.[38] Because most of what physicians do in caring for patients is not measured—and mostly cannot

feasibly be measured—rewarding a limited number of activities might lead to less effort—and reduced quality—in these other unmeasurable areas.[39] However, so far, the limited literature that finds a lack of positive impact on measured quality has not found stinting on other important areas of quality.

Behavioral economics offers some insights into why, despite intuitive appeal, pay-for-performance may have had a limited impact on improving quality of care. At root, economic incentives seek to change behavior through *extrinsic* motivation—yet most clinicians want the best outcomes for their patients based on an *intrinsic* motivation to act in their patient's best interests. Some of the nation's most effective quality improvement campaigns – such as those aimed at reducing central line infections and "door-to-balloon" times for heart attack patients requiring surgery to open up occluded arteries – were wholly based on intrinsic motivation combined with effective new strategies, without financial incentives.[40]

Further, there is evidence outside of health care that money may not be a solution—and in fact, it may backfire—particularly for cognitively challenging activities[41] performed by highly skilled persons needing to muster their skills to manage complexity and solve problems creatively.[42] While financial incentives are effective at changing behavior when the pathway from the incentive to the desired behavior is short and direct, the pathway from incentive to improving quality is long and indirect—and often times unknown. Experimental data demonstrate that financial incentives often crowd out intrinsic motivation.[43] In particular, tangible rewards, especially monetary ones, undermine motivation for tasks that are intrinsically interesting or rewarding and have their strongest negative impact when the external rewards are perceived as large, controlling, contingent on very specific task performance, or associated with surveillance, deadlines, or threats. In short, if intrinsic motivation is high and crowding out is strong, payment incentives may worsen performance. [44] It will be important to learn whether organizations like hospitals respond differently to payment incentives than professionals.

Issues That Arise From Reliance on Structure and Process Measures

Structural measures, as described earlier, can include metrics such as the volume of a certain type of operation performed by a hospital. Such indicators can sometimes be a predictor of outcomes; for example, there is a literature that shows that for some procedures, institutions that do more procedures achieve better health outcomes,[45] but the relationship between volume and outcomes is variable—by procedure and provider. Some quality ranking systems, like *U.S. News and World Report*'s rankings of hospitals, rely at least in part on structural criteria, such as nurse-to-patient bed ratios and availability of new technology. More commonly, structural criteria are included as survey questions to accredit or certify that a provider meets threshold standards to be included as a recipient of program funds. For example, "conditions of participation" establish the structural quality and safety standards that all U.S. hospitals must follow to participate in Medicare and Medicaid.

Meanwhile, process measures—which are the most common type of quality measures—calculate the rate at which a recommended clinical or care process is performed. By one estimate, of 78 HEDIS measures for 2010, all but five were clearly process measures, and none were true outcomes measures.[46] Process measures have several theoretical advantages over outcome measures.

First, calculating process measures is more straightforward because in some cases (for example, when evaluating physician prescribing) there may be less need for risk-adjustment to account for case mix differences that clearly affect outcomes. Yet, for process measures that evaluate patient adherence to treatment recommendations, for example, there may be a need for risk adjustment to account for relevant socioeconomic differences.[47]

Second, process measures typically reflect professional standards of care. As a result, they are most often subject to evidence-based, professional standard setting that is readily understood by clinicians. In contrast, the factors that often contribute to different outcomes across institutions include organizational culture, leadership, teamwork, technology, and other factors not part of professional standards of care that clinicians and other individuals can readily control.[48] Thus, process measures are "actionable"—that is, the measure itself prescribes the action that the clinician, institution, or health plan needs to take to improve performance.[49] Feedback to clinicians is more personally relevant and thus easier to act on.

Finally, practically, there is often a large research base that provides evidence on which processes reliably improve particular outcomes, although the studies do not always cover all populations of interest, especially the elderly.

Despite the theoretical advantages of process measures, reliance on them to assess quality presents several problems.

There are major gaps in what process measures can measure. Currently, quality of care in the outpatient setting has become synonymous with preventive care and chronic disease management, with some growing interest in patient experience – virtually ignoring the very important quality issues of safety, effectiveness, coordination, and efficiency.[50] The result is that the available process measures may give a very misleading picture of quality for clinicians and organizations.[51] There are important clinical areas for which measures are lacking and are therefore, arguably, not being given the attention they deserve. For example, we have few measures to assess:

- diagnosis errors (which are alarmingly common and outnumber surgical errors as the leading cause of outpatient malpractice claims and settlements);[52]
- the appropriateness of diagnostic and therapeutic interventions;[53] and
- providers' ability to skillfully manage complex patients with varying combinations of multiple clinical and psychosocial problems.[54]

Furthermore, many of these gaps are not likely to be filled, given the limited types of data currently available from administrative claims and clinical records.

Process measures do not always predict outcomes. Recent research suggests that even the longstanding and broadly accepted CMS process measures for heart failure, heart attack, and pneumonia did not predict overall short-term mortality in the Premier demonstration. Similarly, currently available information on CMS Hospital Compare website shows that the process measures used to assess surgical performance did not help patients identify hospitals with better outcomes for high-risk surgery.[55] This finding is consistent with other studies for non-surgical conditions.[56]

There are several possible reasons for the lack of relationship between process measures and short-term outcomes at the hospital level:

- Process measures tend to reflect quality for narrow actions for a small subset of patients with particular conditions. For example, most of the CMS process measures for heart attack apply to fewer than half of the patients admitted to the hospital with this condition—and some apply to only 10 percent or fewer.[57,iv]
- Some process measures are only expected to provide a benefit over a long time horizon, so differences in early mortality would not be expected. For example, the use of beta-blockers after discharge for patients who survive a heart attack would not be expected to have a large effect in the subsequent 30 days, even though a benefit could become apparent for individual patients over the following year.
- Some conveniently available process measures, such as smoking cessation education, were never associated with reduced mortality, and so would not be expected to reduce mortality.
- Measurement error can weaken the association between a measured process and an outcome if the way a process is measured differs from how it was implemented in the original research.
- Process measures used for some conditions, such as treating a heart attack, typically do not capture overuse or inappropriate use of medications. An institution could appear to be performing highly on a measure even if they were indiscriminately administering a medication to patients for whom the drug is contraindicated.
- Process measures may not directly measure the effectiveness and appropriateness of actual care, even as it gives credit for performing a particular action. A measure might give credit for providing smoking cessation advice, no matter how perfunctory. A hospital might receive credit for administering a recommended medication, even if the wrong dose is administered, or used in a patient at risk for an adverse drug interaction.[58,v]

[iv] This means sample size could be hampering statistical analyses of the relationship between these process measures and outcomes. If compliance with the measure improves outcomes for a small portion of the patients, then the overall effect may be hard to detect.

[v] To illustrate, one commonly used performance measure is whether patients receive antibiotics immediately prior to surgery. In evaluating an initiative at Johns Hopkins Hospital that used this measure, evaluators found that 30 percent of patients did not receive the correct dose, mainly because overweight patients needed a higher dose, yet the hospital would have received credit on the performance measure regardless. In this case, the lack of association that was

Teaching to the test and diverting resources. A major concern with reliance on process measures rather than outcomes is that the hospital or medical practice being assessed could be diverting resources from other areas to ensure the requisite performance on the process measures, meanwhile ignoring problems in areas of care not being assessed, which also contribute importantly to hospitals' varying outcomes.[59] Borrowing from the critique of performance measures in education, this is commonly referred to as "teaching to the test."[vi]

Practical Problems. A practical limitation in using process measures relates to the high cost of data collection; that limitation produces a heavy reliance on laboratory tests and prescription drugs, which limits the care processes than can be measured. For example, the key work process improvements that reduce central line-associated blood stream infections (CLABSI) relate to a checklist of recommended activities, such as hand washing. However, experience has shown that self-reported compliance grossly overestimates performance. To obtain a valid measure would require having an anonymous observer actually watch central line placements. However, because these catheters are inserted at random times throughout the day, this type of data collection would be exceedingly expensive. In this case, fortuitously a valid outcome measure (the CLABSI rate) was ultimately developed to substitute for prior reliance on unreliable and costly collection of process measures. Whereas an individual hospital with high infection rates may want to collect process measures on compliance with the checklist periodically as part of its internal quality improvement effort, broadly collecting these process measures for public dissemination would be neither valid nor feasible.

Finally, updating process measures based on emerging evidence is often difficult and resource-intensive, resulting in the use of measures that may no longer meet recommended standards for process measures. In general, good measures should: have a strong evidence base showing that the measured care process leads to improved outcomes; capture whether the measured care process has, in fact, been provided with accuracy; address a process that has few intervening care activities that must also occur to achieve the desired outcome; and have little or no chance of inducing adverse consequences by their use.[60] Many process measures continue in wide use despite failing one or more of these criteria.

"A major concern with reliance on process measures rather than outcomes is that the hospital or medical practice being assessed could be diverting resources from other areas to ensure the requisite performance on the process measures, meanwhile ignoring problems in areas of care not being assessed."

The Challenges of Outcome Measures

Given these reasons to avoid an overreliance on structure and process measures, there is growing interest in measuring outcomes of care.[61] Patients are interested in surviving a serious illness and regaining optimal functioning, avoiding hospital admissions, having positive experiences, and minimizing symptoms—not the clinical processes providers use to achieve those desired outcomes. No set of process measures—even if they were accurate and important predictors of outcomes—can be comprehensive enough to serve as a substitute for actual outcomes.[62] When coupled with cost data, outcome measure data can also present patients with a useful measure of value as they choose providers.

Outcome measures are also attractive because there is growing recognition that hospitals can impact patient outcomes through factors beyond care processes—such as teamwork, leadership, and culture.[63] Moreover, the ever growing number of process measures—some of which are collected by manual medical record extraction—place an increasing administrative burden on providers, often for limited return in patient outcomes.

While many now call for migrating from measuring processes to outcomes, accomplishing the transition has proven devilishly difficult. Simply put, accurately measuring patient outcomes, while conceptually appealing, is very difficult to accomplish. Some of the key challenges associated with measuring outcomes are described below.

ultimately found between performance on this process measure and the outcome of interest—reducing surgical site infections—may have resulted from the wrong thing being measured.

[vi] Most process measures also currently require manual data collection, which is typically performed by quality improvement staff, diverting their ability to participate in other efforts to improve care.

Risk adjustment. One reason measuring outcomes is challenging is because an individual patient's outcome is not simply the result of the effectiveness of medical care, but is also impacted by a patient's risk factors (i.e., how sick they are before receiving care, and how severe their current illness is) as well as chance events.[64] Social determinants of health may also be important, and it is unclear to what extent providers should be held accountable for outcome differences associated with such factors. To avoid penalizing hospitals and physicians who treat higher-risk patients, measuring outcomes requires using rigorous risk adjustment models to account for variation in patient characteristics and severity of illness that may importantly affect outcomes.[65] Unfortunately, while risk adjustment techniques have advanced in recent years, there is no standardized approach to adjusting outcomes for patient risk—different risk adjustment approaches make different operational decisions with different consequences for the measured performance on outcomes.[66] In an effort to improve risk adjustment approaches, the Council of the Presidents of Statistical Societies recently produced a consensus document recommending that CMS augment the patient-level attributes it uses to risk adjust data with the addition of race or other demographic variables.[67]

Risk adjustment models generally perform better when the patient population is narrow and well specified, such as patients having a specific type of surgery. Risk adjustment models for diverse patient populations, such as all hospitalized patients, perform less well and can often lead to inaccurate inferences.[68] As such, measures of overall hospital mortality generally should be avoided or used cautiously,[69] although a recently developed hospital-wide measure of all-condition readmission rates appears to perform well.[70]

Data validity. Other challenges associated with measuring outcomes include concerns about the validity of outcome measures—meaning, whether a measure correctly assesses the concept being measured. A measure can lack validity if it inappropriately excludes certain information, does not appropriately adjust or stratify the baseline risk of measured patients, uses multiple and inconsistent data sources or methods, uses incorrect data, or does not correctly capture the concept of quality that it is intended to measure.[71] Claims data—which are often used to calculate performance measures, due to their low cost—can introduce validity concerns, since they fail to identify preexisting conditions and complications that occur after hospital admission, making an accurate assessment of baseline patient risk factors problematic.[72]

Public reporting can also introduce validity concerns about the accuracy of the data being used to calculate performance measures. When CMS stopped paying the costs of selected preventable adverse events under diagnosis related groups, there was a marked drop off in reporting of now unpaid complications from central line infections. Yet, a study based on clinical lab data finds no evidence that the nonpayment policy affected the true infection rate.[73] In general, measures of hospital infections and other complications calculated using administrative data correlate poorly with those calculated using medical record review[74] and other sources. Yet, medical records are far from a gold standard with respect to the patient's information. In short, there are considerable challenges in profiling institutions based on such source data.

Surveillance bias. Another factor in measuring certain outcomes is surveillance bias—the idea that more closely monitoring something can lead to higher rates of detecting something of interest—which can cause significant errors.[75] For example, one hospital found that their rate of deep venous thrombosis (DVT) increased ten-fold when doctors started looking harder for patients with this condition through greater use of routine ultrasounds.[76] As a result, the hospital went from having one of the lowest rate of DVTs to one of the highest, putting the hospital at financial and reputational risk and demoralizing the physicians who felt they were providing better care though the enhanced surveillance. The problem of surveillance bias has also been observed when attempting to measure rates of medical errors—where more conscientious programs to reduce errors lead to higher rates of detection and apparently worse performance.

Sample sizes. Another issue in measuring outcomes is that large samples are often needed to provide measures with acceptable random error. Many adverse outcomes are rare, and as such, measures of outcomes over a short period of time may have too few events to provide a stable measure. This challenge is especially acute in small hospitals that may have a low volume of specific procedures. One approach to addressing this problem is to consider cumulative performance over several years, rather than an annual measure, to increase the number of patients included in a measure's denominator. The downside, of course, is that accumulating data over years will compromise the objective of real-time appraisal of performance and make it more difficult to detect changes. Personnel may

have changed or new care processes adopted during the time period of the extended performance period, thereby compromising the accuracy of the measure. Another approach would be to aggregate small practices into larger groups, sometimes called "pods," for statistical purposes. That approach increases statistical sensitivity but at the cost of specificity, as the group's performance may not well reflect that of an individual practice.[vii]

* * *

Increasingly, the problems with process measures are being acknowledged. CMS has indicated that it recognizes it needs to strengthen its portfolio of hospital measures, especially outcome measures, such as by emphasizing measures of 30-day mortality, hospital-acquired infections, cost, and patients' experiences with care. And while there is growing interest in relying on outcome measures, since they better reflect what patients and providers are interested in, establishing valid outcome measures pose their own substantial challenges—including the need to risk-adjust results to account for patients' baseline health status and risk factors, assure data validity, recognize surveillance bias, and use sufficiently large sample sizes to permit correct inferences about performance.

Policy Recommendations

It should be clear by now that measuring the quality of health care, while worthwhile and potentially even transformative, is technically difficult and prone to error. Given this background and the important role that performance measurement can play in health care, we make several policy recommendations to advance the field.

1. Decisively move from measuring processes to outcomes;
2. Use quality measures strategically, adopting other quality improvement approaches where measures fall short;
3. Measure quality at the level of the organization, rather than the clinician;
4. Measure patient experience with care and patient-reported outcomes as ends in themselves;
5. Use measurement to promote the concept of the rapid-learning health care system;
6. Invest in the "basic science" of measurement development and applications, including an emphasis on anticipating and preventing unintended adverse consequences; and
7. Task a single entity with defining standards for measuring and reporting quality and cost data, similar to the role the SEC serves for the reporting of corporate financial data, to improve the validity and comparability of publicly-reported quality data.

1. Decisively move from measuring processes to outcomes.

The operational challenges of moving to producing accurate and reliable outcome measures are daunting but worth the commitment. Patients, payers, policy-makers, and providers all care about the end results of care—not the technical approaches that providers may adopt to achieve desired outcomes, and may well vary across different organizations. Public reporting and rewards for outcomes rather than processes of care should cause provider organizations to engage in broader approaches to quality improvement activities, ideally relying on rapid-learning through root cause analysis and teamwork rather than taking on a few conveniently available process measures that are actionable but often explain little of the variation in outcomes that exemplifies U.S. health care.

However, given the inherent limitations of administrative data, which are used primarily for payment purposes, and even clinical information in EHRs, consideration should be given to developing a national, standardized system for outcome reporting.[77] A new outcome reporting system would not be simple or inexpensive, but current data systems may simply be insufficient to support accurate reporting of outcomes. An example is the National Health Care Safety Network system for reporting health care infections.[78]

Alternatively, EHR vendors could modify their products to allow them to be used to calculate validated quality measures. By standardizing which structured data elements they include in their products and the

[vii] An approach specific to patient safety outcomes is to aggregate multiple types of adverse events into a global measure of patient safety. Yet this approach, which relies on "triggers" (clues in the medical record that may indicate that an adverse event occurred) lacks sufficient rigor to measure rates of outcomes and to make inferences about quality and may lead to biased results. See: Mattsson TO, Knudsen JL, Lauritsen J, et al. "Assessment of the global trigger tool to measure, monitor and evaluate patient safety in cancer patients: reliability concerns are raised." *BMJ Quality & Safety,* doi:10.1136/bmjqs-2012-001219, 2013.

metadata they use to describe these fields, vendors could allow for the calculation of validated quality measures, such as those collected by National Surgical Quality Improvement Program and the Society of Thoracic Surgeons. Once collected, clinical data would need to be evaluated for validity and quality. Prioritizing which measures require highly valid data and which do not may also help. It may be that for rare events, less accurate, although substantially less costly, administrative data would suffice, while for more common events and conditions, it would be more cost-effective to collect clinical data from clinical records. However, the quality of EHR data is also being questioned.[79]

An emphasis on measurement of outcomes, rather than care processes, need not ignore the contribution of specific processes that are associated with achieving better outcomes. In fact, achieving high reliability on process measures could be viewed as an internal tactic that providers might adopt as part of a comprehensive approach to achieve good outcomes, rather than as an end in itself.[80] Professional societies or governmental agencies could maintain a library of process measures that providers could select from to audit their own performance. But here the distinction between measures for quality improvement and for public reporting becomes important: publicly reported measures could emphasize the outcomes of interest, while measures used internally for quality improvement could emphasize the care processes that an organization is working on performing better.

A relatively small number of process measures, especially if linked with intermediate outcome measures, could serve as excellent measures for public reporting, mitigating the risks for surveillance bias, although the public would need to be educated about their clinical implications. Process measures (e.g., obtaining hemoglobin A1C levels in diabetics and properly taken blood pressure readings) could be linked to intermediate outcome measures (e.g., hemoglobin A1C level and blood pressure). The use of such measures in public reporting efforts could also educate patients and consumers about these important parameters of clinical care. However, caution should be used in using intermediary outcome measures, as demonstrated by the recent experience in which intensive treatment of patients to lower their hemoglobin A1C was recently shown not to be associated with the favorable outcomes expected. NCQA and others developed process measures favoring achievement of hemoglobin A1C levels below 7 percent. Yet, it was precisely this level that failed to show improved outcomes in three recent randomized trials, ultimately leading to the abandonment of that process measure by NCQA.

In some clinical areas, process measures that assess the rate at which specific harmful medical errors occur also hold appeal. For harms that are almost entirely preventable—some of which are referred to as "never events"—risk adjustment and other statistical concerns should be unimportant.

A promising avenue for supporting a movement toward reliance on outcomes is greater use of patient-reported outcomes, which are derived using tools that measure what patients are able to do and how they feel through surveys. A wide variety of patient-level instruments to measure patient-reported outcomes related to physical, mental, and social well-being have been used in clinical research, such as within the National Institutes of Health's Patient-Reported Outcomes Measurement Information System. Extending this research application for purposes of accountability and performance improvement will require additional work to address methodological and data challenges.[81]

2. Use quality measures strategically, adopting other quality improvement approaches where measures fall short.

While working to develop a broad set of outcome measures that can be the basis for attaining the goals of public accountability and information for consumer choice, Medicare should ensure that the use of performance measures supports quality improvement efforts to address important deficiencies in how care is provided, not only to Medicare beneficiaries but to all Americans.

CMS' current focus on reducing preventable rehospitalizations within 30 days of discharge represents a timely, strategic use of performance measurement to address an evident problem where there are demonstrated approaches to achieve successful improvement.[82] Physicians and hospital clinical staff, if not necessarily hospital financial officers, generally have responded quite positively to the challenge of reducing preventable readmissions. CMS has complemented the statutory mandate to provide financial incentives to hospitals to reduce readmission rates by developing new service codes in the Medicare physician fee schedule that provide payment to community physicians to support their enhanced role in assuring better patient transitions out of the hospital in order to reduce the likelihood of readmission.[83]

CMS recently announced that after hovering between 18.5 percent and 19.5 percent for the past five years, the 30-day all-cause readmission rate for Medicare beneficiaries dropped to 17.8 percent in the final quarter of 2012,[84] implying some early success with efforts to use performance measures as part of a broad quality improvement approach to improve a discrete and important quality and cost problem. However, this approach is not without controversy. Improvements have been modest, and some suggest that readmission rates are often outside the hospital's control, so CMS' new policy unfairly penalizes hospitals that treat patients who are the sickest.[85] And while readmission in surgical patients is largely related to preventable complications, readmissions in medical patients can be related to socioeconomic status. Also, some have even questioned the accuracy of CMS'seemingly straightforward readmission rate measure, finding that some hospitals reduce both admissions and readmissions—a desirable result—yet do not impact the readmission *rate* calculation.[86] And one of this paper's authors (R. Berenson) has suggested a very different payment model that would reward hospital improvement rather than absolute performance, thereby addressing the reality that hospitals' abilities to influence readmission rates do vary by factors outside of their control.[87]

We consider the current controversy around implementation of a readmissions penalty to be a healthy debate. Because the purpose for which the penalty was designed is so important, scrutiny and vigorous discussion can lead to improvements to CMS' payment policy and performance measures to address what remains an unacceptable failure in U.S. health care delivery. There clearly is a tension between getting the measures absolutely right and achieving a "good enough" status that can produce quality improvement. In the words of Jonathan Blum, deputy administrator and director for the Center of Medicare at CMS, "It's a very traumatic event to go back to the hospital. I'm personally comfortable with some imprecision to our measures."[88]

With the growing evidence that Congress's value-based purchasing approach to measuring and rewarding hospitals only marginally improves patient outcomes, and possibly diverts attention from doing the hard work of making culture and work process improvements that actually would produce improved outcomes, Congress should refocus its directives to CMS to emphasize improving specific quality deficiencies—relying more on promoting collaborative quality improvement activities and new payment approaches that incorporate performance measures than on public reporting and pay-for-performance *per se*. As an illustration, the nuclear industry has a robust approach to improving quality using peer-to-peer review, validated tools, and a focus on learning rather than judging.[89]

CMS on its own created the Partnership for Patients, a public/private partnership to improve the quality, safety, and affordability of health care for all Americans. The initiative promotes active collaboration by physicians, nurses, and other hospital personnel, as well as employers, patients and their advocates, and the federal and state governments to address tangible problems where approaches to quality improvement to improve outcomes exist but need broad-based adoption. Specifically, CMS is funding 26 hospital engagement networks to allow 3,700 hospitals to share best practices, and funding 82 sites to provide care transitions services to Medicare beneficiaries leaving the hospital through the agency's Community-Based Care Transitions Program; it is also encouraging patient engagement through both of these efforts.[90] The Partnership for Patients began in 2011, under the guidance of then acting CMS Administrator, Donald Berwick, and has targeted two basic areas for quality improvement with specific measureable outcome objectives:[91]

1. **Making Care Safer.** By the end of 2013, preventable hospital-acquired conditions would decrease by 40 percent compared to 2010.
2. **Improving Care Transitions.** By the end of 2013, preventable complications during transition from one care setting to another would be decreased so that all hospital readmissions would be reduced by 20 percent compared to 2010.

Unfortunately, this effort started without validated performance measures and currently lacks valid performance measures for most of the conditions. As a result, it will be exceedingly difficult to evaluate whether this program improved quality or safety for patients. Given the significant public investment in this program, rigorous evaluation should be a requirement.

A successful model of the strategic use of measures to accomplish substantial quality improvement can be found in the recent effort to reduce CLABSI (see appendix for more information on CLABSI). In this case, the primary motivation for physicians, nurses, and other hospital staff to participate in this activity was intrinsic—to reduce preventable mortality and morbidity caused by infections. One of the authors (P. Pronovost) who was instrumental in developing and leading the CLABSI-reduction programs believes that

public reporting of infection rates by states, *Consumer Reports*, the Commonwealth Fund, and, later, CMS had a generally positive effect on stimulating interest and action at senior levels of hospital management. Also contributing were the efforts of the Joint Commission with its national patient safety goals, and the Center for Disease Control and Prevention's (CDC) National Healthcare Safety Network and its work with state health departments to shine a spotlight on a problem that had a solution. The CDC recently reported that central-line bloodstream infections dropped by 41 percent between 2008 and 2011.[92]

Many opportunities for broad-based collaborations to improve hospital quality exist. CMS' current value-based purchasing efforts, requiring reporting on a raft of measures of varying usefulness and validity, should be replaced with the kind of strategic approach used in the national effort to reduce bloodstream infections.

Similarly, the current approach to improving the quality of care provided by physicians in Medicare needs to be reconsidered. Many physicians believe quality reporting on a few measures is being promoted as an end in itself, whether or not the particular measures chosen represent high priority for improvement, can accurately reflect the physician's actual quality of care, or are associated with meaningful patient outcomes. Drawing inferences about a physician's quality using a few measures peripheral to the physician's core professional activities may well be misleading and a diversion from the opportunity to engage physicians in substantive quality improvement activities.

Here, again, policymakers should be more strategic, focusing on clinical areas where measures are meaningful and valid, and where concerted multi-party collaboration could materially improve the health of the population. With this approach, it is likely that not all physicians in Medicare would be routinely measured; but much of what the public wants to know about physician competence and performance cannot be measured using the currently available measure sets. Strategies that work through peer assessment and fostering professionalism may also provide promising opportunities to improve quality and safety.

Observing the lack of "high leverage" processes of surgical care, particularly those specific to particular procedures, experts on surgical quality have suggested that surgeons be encouraged and supported to participate in surgical learning collaborative activities, with no reporting or rewards for individual performance.[93] Building on this suggestion, a more strategic approach would judge the effectiveness of

"CMS' current value-based purchasing efforts, requiring reporting on a raft of measures of varying usefulness and validity, should be replaced with the kind of strategic approach used in the national effort to reduce bloodstream infections."

care in terms of collective improvements in outcomes—on clinical quality, patient experience, and cost. Measurement would be integrated into quality improvement initiatives, such as those led by Regional Health Improvement Collaboratives,[94] national medical specialty societies,[95] national specialty boards,[96] and accountable care organizations (ACOs) as they come online. In short, Congress should allow CMS greater flexibility to provide physician incentives to actively participate in meaningful quality improvement collaboratives as an alternative or a complement to routine reporting and public reporting on a handful of quality measures.

3. Measure quality at the level of the organization, rather than the clinician.

Historically, the physician has been viewed as the leader of medicine, with responsibility for the care and outcomes of patients; in iconic photographs and paintings, the physician is seen as a lone, heroic figure. Such a view has led to natural interest in the measurement of individual physicians' performance. It is therefore not surprising that some of the information brokers, including the *U.S. News and World Report* and many city magazines like the *Washingtonian* provide ratings of "top doctors," often based mostly on reputation, warranted or not.

However, this focus on the individual is flawed for most measures of quality and presents substantial technical challenges. Systems-based care is emerging as a key value within health care and a vital component of high quality care, while the notion that an individual health professional can be held accountable for the outcomes of patients in isolation from other health professionals and their work environment is becoming an outdated perspective. For example, better intensive care unit staffing sometimes mitigates the evidence that surgeons who perform more procedures achieve better outcomes.[97] The communication and coordination of services across providers is required to ensure that patients, many of whom have multiple conditions, are assisted through various health care settings.[98] For some aspects of care, such as diagnosis errors and patient experience, measuring at the individual

physician level might be considered. Nevertheless, focusing measurement on an individual runs counter to our goals in promoting teamwork and "systemness" as core health care delivery attributes.

For some professionals whose individual performance does matter, such as a surgeon in the operating room, there are rarely meaningful and valid process measures that reflect their individual performance anyway. In contrast, surgical outcomes depend crucially on the performance of the entire surgical team and the facility in which the procedure takes place. Also, consistent with the discussion of intrinsic motivation earlier, it is plausible that individuals respond differently to payment incentives than do organizations; assessment and pay-for-performance at the organizational instead of the individual level should be less likely to crowd out health professionals' intrinsic motivations to provide high-quality care.

In addition to the conceptual issues with measuring an individual clinician's performance, technical and statistical issues are also prominent. The attribution of a particular care process or outcome to a particular clinician is often difficult, if not impossible, to make. For example, several specialists, hospitalists, nurses, technicians, and others will typically care for a patient with a heart attack. Good estimates of performance require that the individual or group being evaluated have a sufficient number of observations to make inferences about their performance that are precise enough to be meaningful. Yet, many physicians and other health care professionals often lack sufficient volumes of certain types of patients to permit valid inferences about their performance. By focusing assessment on the organization, hospital unit, or clinic, rather than the individual clinician, measures can assess and promote team-based care while addressing many of the technical issues that can undermine the value of measurements. For virtually every performance measure evaluated (e.g., safety culture, patient experience, hand hygiene, infection rates, process measures) there is usually substantially greater variation among units within a hospital than among hospitals. The unit or clinic is therefore often the most effective focus for improvement.

While measuring at this level is conceptually right and technically easier than measuring a single individual's performance, it nevertheless presents challenges. For example, it makes strategic sense to measure the quality of ACOs, especially to guard against the possibility that ACOs would stint on care as they receive increasing incentives to limit spending. Yet, recently, 31 Pioneer ACOs participating in a major CMS demonstration sent CMS a letter criticizing both the agency's use of measures that "are not yet mature" and the way in which CMS determined the thresholds for acceptable performance.[99] We expect they will work through the differences and arrive at a reasonable result.

Finally, measuring at the level of the organization does not imply that substandard individual performance should be tolerated. CMS and its contractors should aggressively use performance measures to identify such unacceptable performance and sanction or otherwise limit the ability of these practitioners to serve Medicare beneficiaries. But the role of measurement for "policing" the performance of individuals is different from public reporting to inform patient choice or to provide financial incentives to improve performance.

4. Measure patient experience with care and patient-reported outcomes as ends in themselves.

Performance measurement has too often been plagued by inordinate focus on technical aspects of clinical care—ordering a particular test or prescribing from a class of medication—such that the patient's perspective of the care received may be totally ignored. Moreover, many patients, even with successful treatment, too often feel disrespected. Patients care not only about the outcomes of care but also and their personal experience with care. There is marked heterogeneity in the patient experience, and the quality of attention to patients' needs and values can influence their course, whether or not short-term clinical outcomes are affected. Some patients have rapid recovery of function and strength, and minimal or no symptoms. Other patients may be markedly impaired, living with decreased function, substantial pain, and other symptoms, and with markedly diminished quality of life. It would be remiss to assume that these two groups of patients have similar outcomes just because they have avoided adverse clinical outcomes such as death or readmission.

In recommending a focus on measuring outcomes rather than care processes, we consider surveys or other approaches to obtaining the perspectives of patients on the care they receive to be an essential component of such outcomes. When designed and administered appropriately, patient experience surveys provide robust measures of quality, and can capture patient evaluation of care-focused communication with nurses and physicians.[100] And while patient-reported measures appear to be correlated with better outcomes, we believe they are worth collecting and working to improve in their own right, whether or not better

experiences are associated with improved clinical outcomes.[101]

We believe that measuring patient experience is not only important because it can facilitate care that improves clinical outcomes, but also because it represents an important outcome in its own right. If our health system is truly to commit itself to the goal of delivering patient-centered care, it requires assessment of patients' experiences with the care they receive and self-reported health status and functioning—whether or not they are associated with commonly-measured outcomes such as mortality, complications, errors, and avoidable readmissions. With the growing array of scientifically rigorous surveys of patient experiences with care,[102] we now have the capacity to incorporate standardized assessments of that experience into the measurement enterprise, increasing our sensitivity to the detection of differences in the results that are being achieved by provider organizations, assuming that we can adequately take into account baseline differences in patient characteristics. Given the inevitable gaps in both process and outcome measures for specific areas of clinical care, it is important to realize that patient experience is ubiquitous and can be drawn upon to measure a broad range of performance.

5. Use measurement to promote the concept of the rapid-learning health care system.

Initiatives to promote performance measurement need to be accompanied by support to improve care. Quality measure data should not only be technically correct, but should be organized such that their dissemination is a resource to aid in quality improvement activities. As such, quality measurement should be viewed as just one component of a learning health care system that also includes advancing the science of quality improvement, building providers' capacity to improve care, transparently reporting performance, and creating formal accountability systems.

There are several strategies to make quality measure data more actionable for quality improvement purposes. For example, for publicly reported outcome measures, CMS provides hospitals with lists of the patients who are included in the calculation. Since the outcomes may occur outside the hospital for mortality and for readmissions that are at other hospitals, this information is often beyond what the hospitals already have available to them. These data give providers the ability to investigate care provided to individual patients, which in turn can support a variety of quality improvement efforts.

In addition, collaborative activities among institutions can produce insights that may elude them individually. Measures can help identify top performers, and detailed analysis can identify what distinguishes those who excel. As an example, the marked improvement nationwide in the "door-to-balloon" time it takes patients experiencing symptoms of a heart attack to receive a treatment to open up occluded coronary arteries was largely a result of relevant and valid measurement of provider-specific timeliness, followed by intense investigation of the features of top performance, and only then a national campaign to transform practice using the best practices uncovered by the top performers – all facilitated by the intrinsic motivation of health professionals on the front lines to improve patient outcomes.

To facilitate a learning health care system, investments are also needed to advance quality improvement sciences and to build capacity among provider organizations to practice these sciences. For example, although root causes analysis is a promising tool, its full potential has not been realized in health care; a likely explanation, at least in part, is that health care is one of the only risky industries in which lawyers and practitioners, rather than safety experts with formal training, investigate adverse events. Promising efforts to improve quality and safety are based on adherence to professional norms and include peer-to-peer review, a technique borrowed from the nuclear industry.[103] In addition, EHR vendors and other medical device manufacturers will need to agree to share their data and open it for analysis.

6. Invest in the basic science of measurement development and applications, including an emphasis on anticipating and preventing unintended adverse consequences.

In describing the problems with process measures and the challenges with outcome measures above, the unfortunate reality is that there is no body of expertise with responsibility for addressing the science of performance measurement. NQF comes closest, and while it addresses some scientific issues when deciding whether to endorse a proposed measure, NQF is not mandated to explore broader issues to advance the science of measure development, nor does it have the financial support or structure to do so. An infrastructure is needed to gain national consensus on: what to measure, how to define the measures, how to collect the data and survey for events, what is the accuracy of EHRs as a source of performance, the cost-effectiveness of various measures, how to reduce the

costs of data collection, how to define thresholds for measures regarding their accuracy, and how to prioritize the measures collected (informed by the relative value of the information collected and the costs of data collection).

Despite this broad research agenda, there is little research funding to advance the basic science of performance measurement. Given the anticipated broad use of measures throughout the health system, funding can be a public/private partnership modeled after the Patient-Centered Outcomes Research Institute or a federally-funded initiative, perhaps centered at AHRQ. Given budgetary constraints, finding the funding to support the science of measurement will be a challenge. Yet, the costs of misapplication of measures and incorrect judgments about performance are substantial.

Moreover, the science of performance measurement and improvement needs an academic home. While many medical and health policy societies and associations have sections on quality or quality measurement, no professional society primarily focuses on the science of quality measurement and improvement. Such an entity could set standards for and advance the science of qnality measurement, thereby moving the policy discussion from whether measures are good enough to use despite their flaws to a more fundamental discussion of how to achieve good measures, how to assess whether current measures measure up, and whether the costs of attaining good measures are worth the benefits. Professional societies, such as the American Heart Association, have an important role in speaking authoritatively about the science of clinical issues; performance measurement lacks a similar authoritative voice.

Such an endeavor needs to explicitly consider the unintended, yet harmful, consequences of misapplication of performance measures, whether resulting from the measures themselves, in how they are reported and assessed, or in the costs of collecting invalid performance data. There is substantial literature detailing such untoward consequences,[104] some from measures experts who promote the use of performance measurement. For example, some have expressed concern that unless carefully designed, public reporting and pay-for-performance programs will increase racial and ethnic disparities.[105]

7. Task a single entity with defining standards for measuring and reporting quality and cost data, similar to the role the SEC serves for the reporting of corporate financial data, to improve the validity, comparability, and transparency of publicly-reported health care quality data.

There is a plethora of health care quality data being pushed out to the public, yet no rules to assure the accuracy of what is being presented publicly. The health care industry lacks standards for how valid a quality measure should be before it is used in public reporting or pay-for-performance initiatives, although some standards have been proposed. The NQF does a good job of reviewing and approving proposed measures presented to it, but lacks the authority to establish definitive quantitative standards that would apply broadly to purveyors of performance measures. Yet, as discussed earlier, many information brokers publically report provider performance without transparency and without meeting basic validity standards. Indeed, even CMS, which helps support NQF financially, has adopted measures for the PQRS that have not undergone NQF review and approval. Congress now is considering "SGR repeal," or sustainable growth rate legislation, that would have CMS work directly with specialty societies to develop measures and measurement standards, presumably without requiring NQF review and approval.[106]

Without industry standards, payers, policy makers, and providers often become embroiled in a tug-of-war; with payers and policy-makers asserting that existing measures are good enough, and providers arguing they are not. Most often, neither side has data on how good the contested measures actually are. Most importantly, the public lacks valid information about quality, especially outcomes, and costs.

Indeed, most quality measurement efforts struggle to find measures that are scientifically sound yet feasible to implement with the limited resources available. Unfortunately, too often feasibility trumps sound science. In the absence of valid measures, bias in estimating the quality of care provided will likely increase in proportion to the risks and rewards associated with performance. The result is that the focus of health care organizations may change from improving care to "looking good" to attract business. Further, conscientious efforts to reduce measurement burden have significantly compromised the validity of many quality measures, making some nearly meaningless, or even misleading. Unfortunately, measurement bias often remains invisible because of limited reporting of data collection methods that produce the published results. In short, the measurement of quality in health care is neither standardized nor consistently accurate and reliable.

In short, while the number of performance measures is growing, the health care field lacks an entity to create the rules for reporting quality and cost data; as a result, the great variation in performance measure specifications is slowing efforts to advance quality—at times creating conflict over opposing findings.

The field of quality measurement could advance significantly if providers and policy-makers agreed on validity thresholds and transparently reported the validity of their quality measure data. Before the SEC was created in the aftermath of the Wall Street Crash of 1929, when looking at companies' financial data, the information provided by one business could not be compared to another; there were no standard rules for reporting performance. Congress established the SEC as an independent, nonpartisan government entity to, among other things, help ensure standards in the disclosure of financial information, make financial performance transparent, audit businesses, ensure compliance with rules, and apply penalties for transgressions.

Policymakers will need to consider whether such an entity should be housed at AHRQ; should be a public-private partnership, such as NQF; or should be a separate, new government entity. Such a commission could promote standardization, transparency, and auditing of the reporting of quality and cost measures. Consistent with First Amendment guarantees of free speech, we would not provide such an entity regulatory authority to require adherence to standards. Rather, we would anticipate that organizations would voluntarily seek to comply with the applicable standards for reporting performance measures. Under the model, this entity would set the rules for the development of measures and the transparent reporting of performance on these measures, analyze progress (with input from clinicians, patients, employers, and insurers), and audit publicly-reported quality measure data. Private sector information brokers could then conduct secondary analyses of the reports, much like happens in the financial industry through companies like Bloomberg. This SEC-like model would thus ensure that all publicly-reported quality measure data are generated from a common basis in fact and allow apples-to-apples comparisons across provider organizations.

Conclusion

The interest in promoting a health care system that rewards performance needs to be balanced with the practical challenges faced when measuring performance. Improvement requires substantial investments in the underlying science of measurement, greater care in communicating measurement results, greater attention to the role of measures in quality improvement efforts, and using performance data in more strategic ways. The adoption of flawed measurement approaches that do not accurately discriminate between providers can undermine professional and public support for provider accountability, reward indiscriminately, and divert attention from more appropriate and productive quality improvement efforts.

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Appendix

The Role of Performance Measurement in Improving Cardiovascular Care

Twenty years ago, many patients with heart disease were not being treated in accordance with available evidence-based best practices. For example, among patients discharged from the hospital after an acute myocardial infarction, only about half were treated with beta-blocker drugs and only about two-thirds with aspirin.[1,2] Many other evidence-based treatments were similarly underused,[3] and treatment of patients presenting to the hospital with an acute myocardial infarction was often delayed.[4] There was also troubling regional variation, with some areas of the country performing markedly worse than the national average on the measures being used, which was already low.

The past two decades have seen a remarkable transformation in cardiovascular care. In the past decade alone, hospitalizations for acute myocardial infarction have dropped by more than 25 percent and hospitalizations for heart failure have fallen by more than 30 percent.[5,6] Mortality after hospitalizations for acute myocardial infarction has also decreased by more than 20 percent.[7] These improvements have occurred in an era without the introduction of new blockbuster drugs, but with a strong emphasis on performance measurement and quality improvement.

The key change began with the decision by CMS to support the explicit measurement of care provided to patients with an acute myocardial infarction. First with the Cooperative Cardiovascular Project pilot, launched in the early 1990s, and then with the national Cooperative Cardiovascular Project, which followed a few years later, the agency exposed gaps in the quality of care and supported efforts to improve. This performance measurement provided objective information about the quality of care being delivered.[8]

Of note, this broad-based change in practice occurred without financial incentives. Instead, the motivation derived from intrinsic motivation related to professionalism (clinicians' desires to provide the best care they could and to safeguard their reputations). Supportive organizations, including the American College of Cardiology, the American Heart Association, Medicare's Quality Improvement Organizations, consortia of hospitals, and others merely encouraged health care professionals to embrace the responsibility to improve care.

A prime example of measurement stimulating improvement through these programs is the experience with delays in treatment, which is measured as "door-to-balloon" time—the period from when the patient arrives at the hospital with symptoms of an acute myocardial infarction to the time that blood flow in a blocked artery is restored with an emergency percutaneous coronary intervention. The longer the delay, the more damage is done and the more likely the patient is to die. Measurement of door-to-balloon time, later required by CMS, revealed that less than a third of patients were being treated within the guideline-recommended time of 90 minutes.[9] National measurement, through an industry-sponsored registry, enabled the identification of exemplary hospitals that were treating patients faster than the vast majority. With funding from the National Institutes of Health, research then identified the strategies employed by the top performers.[10] A national campaign to disseminate those strategies ensued, resulting today in more than 90 percent of patients being treated within 90 minutes.[11]

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Go back to the paper

Key Players in the Quality Measurement Enterprise

Key entities involved in quality measurement include the National Committee for Quality Assurance (NCQA), the National Quality Forum (NQF), The Joint Commission, and the Agency for Healthcare Research and Quality (AHRQ).

NCQA is a private, nonprofit institution that has been reviewing and accrediting health insurance plans since 1991. More recently, NCQA developed accreditation and certification programs for a range of health care entities, including groups of provider organizations that want to become accountable care organizations and practices that want to be patient-centered medical homes. In 1992, NCQA took responsibility for maintaining a set of newly-developed quality measures called HEDIS, which had been developed by a group of employers and HMOs the year before. In 1995, NCQA used these measures to release the first-ever report card on health plan performance. Today, HEDIS measures are used by a range of organizations to measure performance at both the plan and provider level, and are largely focused on outpatient care. The full HEDIS set includes 80 quality measures divided into five domains of care and is updated every year. NCQA follows a standardized process for developing its measures, which includes multiple stages of internal and external review by a range of advisory groups. NCQA uses three overarching criteria to determine the desirability of adding a new measure: relevance, scientific soundness, and feasibility. Operationally, numerous other criteria help define these major criteria.[1] NCQA is governed by an independent 15-member board of directors, and receives support through grants and corporate sponsorships[2] and through revenues from certification fees it charges plans and providers.

NQF is a private, nonprofit membership-based organization that builds consensus around quality improvement priorities and goals, evaluates and endorses quality standards and measures submitted to it by a variety of types of organizations, and conducts education and outreach activities around quality improvement and performance measurement. NQF's membership includes consumer organizations, public and private purchasers, physicians, nurses, hospitals, accrediting and certifying bodies, supporting industries, and healthcare research and quality improvement organizations. NQF's primary role in the quality landscape is evaluating measures that other organizations develop; Many HEDIS measures, for example, are endorsed by NQF. To date, the organization has endorsed nearly 700 measures, all of which are publicly accessible in their database. NQF evaluates all submitted standards according to four major criteria: importance, scientific acceptability, feasibility, and usability (although if the standard does not meet the first two criteria, it is not considered against the other criteria). Despite the fact that NQF assesses measures against these criteria, it does not establish specific standards that payers and information brokers must adhere to when publicly reporting measures or applying payment incentives to providers in pay-for-performance programs using NQF-endorsed measures. NQF does not endorse proprietary measures, for which the specifications or performance are not in the public domain. NQF is governed by a 33-member board, and receives funding from both public and private sources, including grants from foundations, corporations, and contracts from the federal government, particularly the Department of Health and Human Services' (HHS's) Centers for Medicare and Medicaid Services (CMS).

The Joint Commission, formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), is an independent, not-for-profit organization that accredits more than 20,000 health care organizations and programs in the United States. This volume stems in part from the fact that states and CMS require hospitals and other health

care organizations to be accredited by the Joint Commission in order to be eligible to participate in Medicaid and Medicare. The Joint Commission provides accreditation and certification services for hospitals, home health care organizations, nursing homes, behavioral health care organizations, ambulatory care providers, and independent or freestanding clinical laboratories. It develops performance standards that address elements of operation, such as patient care, medication safety, infection control, and consumer rights. In 1997, the Joint Commission introduced the ORYX initiative, which includes outcomes and other performance measurement data into the accreditation process. In 2010, it categorized its performance measures into accountability and non-accountability measures, placing more emphasis on an organization's performance on accountability measures, which focus on research, proximity, accuracy, and adverse events. The organization is governed by a 32-member Board of Commissioners that includes physicians, administrators, nurses, employers, a labor representative, quality experts, a consumer advocate and educators. It receives support through accreditation fees, as well as corporate sponsorships.[3]

AHRQ is a federal agency within the Department of Health and Human Services. AHRQ's mission is to improve the quality, safety, efficiency, and effectiveness of health care nationwide.[4] AHRQ's Consumer Assessment of Healthcare Providers and Systems (CAHPS) program is a multi-year initiative to support and promote the assessment of consumers' experiences with health care. Through the CAHPS program, AHRQ has developed standardized patient experience surveys that are widely used by health plans, doctor's offices, and dialysis facilities,[5] and maintains a benchmarking database containing the results of various organizations' administrations of this survey.[6] The various versions of the CAHPS surveys ask patients and their caregivers to report on and evaluate their experiences with health care. These surveys focus on elements of care that consumers deem most important, as well aspects of quality that consumers are best qualified to assess, such as the communication skills of providers and ease of access to health care services.[7] AHRQ also maintains a clearinghouse of a variety of types of quality measure specifications and quality improvement resources.[8]

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Go back to the paper

Does Pay-for-Performance Work?

As required by statute, pay-for-performance programs are being launched by the Centers for Medicare & Medicaid Services (CMS) even though quality of care on the CMS core measure set is already improving substantially without additional financial incentives.[1] Since October 2012, under the Hospital Value-based Purchasing Program, 1 percent of hospital payments are adjusted based on performance on specific process, patient experience, and outcome measures—rising to 2 percent in October 2017. Extra payments are provided to hospitals for both achievement and improvement in performance. To promote hospital activity to perform even better, some have called for a much greater percentage at risk based on performance to increase the financial stakes.[2]

Yet, the demonstration that informed the design of the hospital VBP program—the Premier Hospital Quality Incentive Demonstration Project (HQID)—did not actually produce better results than other hospitals, which have also demonstrated improved scores on what were mostly process measures. Indeed, two evaluations found little evidence that the demonstration's use of financial incentives to incentivize improved performance led to reduced

mortality rates beyond those achieved with public reporting alone.[3,4] Another hospital pay-for-performance program implemented in Medicaid in Massachusetts, with much larger financial incentives than in the Premier demonstration, also showed that pay-for-performance had no effect on health outcomes.[5]

In contrast, a pilot in the northwest region of England, built on the Premier demo approach, found that mortality for conditions in the pay-for-performance program—pneumonia, heart failure, and heart attack—decreased, although statistically significant only for pneumonia. There was a small increase in mortality for the larger number of conditions not being rewarded, although the increase did not achieve statistical significance.[6] Of note, participating hospitals adopted a range of quality improvement strategies in response to the performance incentives, to attempt to accomplish systemic change. Also, this incentive program offered larger bonuses and a greater likelihood of achieving bonuses than the U.S. HQID prototype—leading some to speculate that stronger incentives using more measures might achieve a better result from pay-for-performance.[7]

Meanwhile, the findings on pay-for-performance for *physicians* are mixed. In 2004, the United Kingdom introduced a major pay-for-performance approach—the Quality Outcomes Framework—with 136 measures for general practitioners. Payments were generous, adding up to 25 percent more to general practitioners' (GPs') income; more than 99 percent of eligible physicians participated.[8] Analysis showed that the approach did accelerate improvement on measured performance for asthma and diabetes, but not coronary heart disease in the short term; in addition, once targets were reached, improvement in the quality slowed, while the quality of care for two conditions not linked to incentives actually declined, as did scores on measures assessing continuity of care.[9] Further analyses were mixed. One showed improvement in process performance among GPs led to outcome improvements for diabetes, corouary heart disease, stroke, epilepsy, and hypertension, whereas another found that reported improvements in blood pressure control did not reduce stroke, heart attack, or all-cause mortality as would be expected.

In the United States, a major pay-for-performance effort has been carried out by the Integrated Healthcare Association (IHA), an organization with broad representation by health plans, medical groups, purchasers, and consumers. In contrast to the UK approach, IHA has been providing small bonuses for almost a decade to medical groups based on performance on individual measures in the areas of clinical quality, patient experience, and health information technology use. Studies[10,11] have also shown mixed results, with one concluding that medical groups responses to the pay-for-performance incentives "did not translate into the breakthrough improvement in quality desired by plans and purchasers."[12]

Overall, studies do not provide much support for reliance on process measures to improve quality for hospital and physician care, although it seems likely that the details—such as the strength of the incentives, the number and selection of performance measures being used, and restrictions on how bonuses can be used—may affect the success of pay-for-performance programs.[13] The message may be that we have not yet determined how such incentives can be most effectively applied, the program theory for how they work, the extent to which they motivate hospital managers versus physicians, or even if they are sustainably effective in any form over the long run.

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Go back to the paper

Central Line-Associated Blood Stream Infections

Central line-associated bloodstream infections (CLABSI) killed nearly 31,000 inpatients in the United States in 2002.[1] In response to growing awareness of this problem, health providers, hospitals, and payers have mounted various activities which together have produced major reductions in mortality rates among intensive care unit (ICU) patients, although not among other inpatients.[2] The major success can be attributed to collaborations among ICU clinicians to adopt evidence-based practices known to prevent such infections. A pilot project in one ICU at Johns Hopkins[3] was expanded to the statewide Keystone collaborative in Michigan and reduced CLABSIs by 66 percent in 103 ICUs.[4,5] Hospital mortality in Michigan decreased significantly once the collaborative was implemented,[6] with an estimated cost savings of $1.1 million per year.[7] Recent estimates by the Centers for Disease Control and Prevention attribute a 58 percent reduction in ICU-related CLABSIs between 2001 and 2009 to large scale programs, such as the Keystone project, and the spread of the culture and CLABSI interventions to every state. Over 1,100 hospitals participated in this unique AHRQ-funded collaborative effort among Johns Hopkins physicians, the Michigan Hospital Association, the American Hospital Association, and many state affiliates and individual hospitals. Participating hospitals reduced CLABSI rates by 40 percent, achieving a mean infection rate of 1.1 per 1000 catheter days, a rate previously believed to be unattainable.

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Go back to the paper

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Information from Current Qualified Entities (QEs)

Quality Corp Measures Description and Methodologies

OREGON HEALTH CARE QUALITY CORPORATION
A nonprofit partnership for quality improvement

Overview: The Oregon Health Care Quality Corporation (Quality Corp) is dedicated to improving the quality and affordability of health care in Oregon by leading community collaborations and producing unbiased information. The goal of this measurement initiative is to improve patient care by coordinating and consolidating quality and utilization information that health plans share with providers, consumers, employers, policymakers and health insurers. Measuring the quality of health care requires a number of complicated technical decisions. Quality Corp managed a community-wide process to resolve these complex issues by seeking input from key health care stakeholders – those who give care, get care, and those who pay for health care. This summary highlights how scores were computed and how fundamental decisions were made. A multi-stakeholder process was used to adopt principles, conduct research, and produce background papers to help guide key decisions. For a more detailed description of the measure definitions, please see the table at the end of this document.

Data Sources: Claims data for the current report were submitted by 11 participating data suppliers, including eight commercial health plans, two Medicaid managed care plans and Medicaid fee-for-service. Aggregated data also includes claims from selected Medicare Advantage plans. Claims for fee-for-service Medicare patients are not included, though Quality Corp has submitted an application to the Centers for Medicare and Medicaid Services (CMS) to become a Qualified Entity to receive Medicare fee-for-service (FFS) and Medicare Part D data for future rounds of reporting. Claims from Cigna, Aetna, other non-domestic insurers, and some Medicaid managed care plans are not included, nor are denied claims and self-pay visits.

Claims were submitted to the data services vendor, Milliman, Inc, who aggregated the data to calculate results at the medical group, clinic and provider levels. Quality Corp used clinic-supplied information to link providers to the clinics where they deliver care to create clinic-level and medical group-level results. Reports include results for Oregon primary care providers, including nurse practitioners and physician assistants. For most measures, the data represents care provided to commercial and Medicaid patients between January 1 – December 31, 2011.

Measure Selection: Quality Corp's Measurement and Reporting Committee, composed of consumers, providers, employers, policymakers and health insurers, studies measurement issues and makes recommendations to the Quality Corp Board of Directors. The Committee identified principles for measure selection and the first set of Oregon measures. To ensure measures adhered to national standards set by the National Quality Forum (NQF), the Committee primarily chose measures from the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS), a subset of the measures endorsed by the NQF and the most widely-used set for ambulatory care. Since the first round of reporting in 2009, additional measures have been added. These include measures of appropriate low back pain imaging, appropriate testing for children with pharyngitis, well-child visits, generic drug fills, potentially avoidable Emergency Department (ED) visits and hospital admissions for ambulatory-sensitive conditions. The generic drug fill measures were developed by Milliman and have been used by the Puget Sound Health Alliance; the potentially avoidable ED visits measures were developed by the MediCal Managed Care Division of the California Department of Healthcare Services; and the composite measures of hospital admissions for ambulatory-sensitive conditions are among the set of US Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators (PQIs). Measures will continue to be tested and added or deleted as the effort matures.

Assigning Patients to Providers (Attribution): Assigning the correct patients to providers is an important part of developing accurate quality measurement reports. The general consensus among Quality Corp's Committees is that the method for attributing patients to a primary care provider must be fair, consistent and transparent.

Patients are assigned to a primary care provider (PCP) contained in the Quality Corp provider directory. The logic model for attribution then adheres to the following formula:

- Use the health plan designated PCP when that exists and the information is kept up to date.
- Otherwise, use the PCP the patient has seen the most across the two-year attribution period (Jan 1, 2010 – Dec 31, 2011).
- A patient will be attributed to a single PCP.
- If there is a tie, use the most recently-seen PCP.

If a patient receives care only from a specialist or urgent care clinic, they are not assigned a primary care provider (unattributed). In addition, if a claim does not specify the correct CPT codes or provider, the patient is not attributed. For example, unattributed patients for the cervical cancer screening measure might include healthy young women that only receive care from an ob-gyn.

Overall, Quality Corp has observed roughly a 33 percent loss of patients who are unattributed to a primary care provider. While this method has attributed fewer patients overall (smaller denominator sizes), it has resulted in providers confirming 95 percent accuracy of the patients assigned to them.

The exception to this attribution method is the low back pain imaging measure, for which images are attributed to either a PCP or a provider from a list of designated specialties. Attribution is determined by ranking the number of visits during the two-year period ending with the measurement end date and the RVUs for those visits. The tie-breaker goes to the provider with the most recent date of service. The following specialties are included in the available attribution pool for the low back pain imaging measure:

- Chiropractor
- Family Medicine
- General Practice
- Internal Medicine
- Naturopathy
- Nurse Practitioner & Physician Assistant
- Orthopaedic Surgery
- Osteopathy
- Physical Medicine & Rehabilitation
- Women's Health

Calculating Clinic Rates and Scores: Rates were calculated and reported as percentages. A minimum threshold of 25 patients per clinic was established for inclusion in the measure calculation. Clinic-level rates were calculated as follows:

$$Rate = 100 * \frac{Number\ of\ eligible\ patients\ who\ met\ the\ measure\ specification}{Number\ of\ eligible\ patients}$$

NCQA's HEDIS definitions for the eligible population (denominator) consist of patients who satisfied all specified criteria, including age, diagnosis, continuous health plan enrollment, and event or anchor date enrollment requirements (see detailed definitions in the table at the end of this document). Rates were first calculated for each clinic and then an overall clinic rate average for Oregon was calculated for comparison.

During initial rounds of reporting, clinic results were presented only in categories (no raw rates) on the public website www.PartnerForQualityCare.org. Clinics with rates that were above or below one standard deviation from the statewide average rate were reported as "Better" or "Below," respectively. As a result, approximately two-thirds of Oregon clinics were reported as "Average." Quality Corp will continue to report results publicly using these categories. Beginning in summer 2012, raw clinic rates were also reported on the public website.

Medical group rates are calculated across all patients, including patients in clinics that are too small to be publicly reported (less than four primary care providers). The data displays and confidence intervals on provider reports are intended to help with interpretation when case numbers are small. Reports were sent to all providers in eligible clinics regardless of the number of patients in the report in order to increase awareness of the initiative and to solicit feedback. The term "doctor's office" is used in place of the term "clinic" on the public website for easier consumer understanding.

Achievable Benchmark of Care (ABC): The ABC Benchmark, developed at the University of Alabama at Birmingham, indicates the mean rate of best performing Oregon clinics providing care to at least 10 percent of the patient population. The achievable benchmark for each measure was calculated using data from this initiative. The ABC Benchmark provides an objective method for identifying comparative performance levels *already achieved* by "best-in-class" clinics within Oregon. For detailed information, see the website: http://main.uab.edu/show.asp?durki=14503.

Validation and medical group pre-testing: Claims data were submitted by health plans and data suppliers to the data services vendor, Milliman. Milliman worked with each data supplier to validate the submitted data. There were two levels of validation – one that ensured the correct transmission and format of the data and another that ensured measure results were consistent between Milliman and the data supplier. Once validated, the data were aggregated across plans for measure calculation.

Prior to adding new measures to reports, Quality Corp recruits volunteer medical groups to compare preliminary results on Quality Corp's secure portal to patient records. This validation ensures that measures are running as expected and are producing accurate and useful results. A medical group review period is also offered following each new round of reports.

Small Numbers of Patients for Some Providers: Despite the large number of claims in the dataset, some providers and clinics may have only a small number of patients for some measures. In the last reporting round (summer 2012), between 19.8 – 51.8 percent of patients were "lost" because only patients who were continuously enrolled in health plans during the measurement period were counted. Additionally, some patients were not captured in measures because: 1) their condition may not have been coded in a claim, 2) they are not members of a participating health plan, 3) they do not meet extremely strict inclusion criteria (esp. asthma and depression measures), or 4) they were assigned to a different provider. In some cases, the provider may not have had a full-time, full-year experience at the medical group during the measurement year (Jan – Dec 2011).

Accuracy of Claims Data: Through the validation process, errors and omissions in data have been identified as stemming from multiple sources including both the health plans and medical groups' billing practices. After extensive refinement, test clinics determined that 98 percent of their patients were correctly attributed to their PCP. Remaining sources of error were varied and often specific to the medical group or health plan. For some conditions, such as diabetes, the denominator was extremely accurate. For others, such as Pap tests, the denominator occasionally included women who had received a hysterectomy prior to 2005. Evidence of services is not always captured in claims and this is usually due to coding issues. Attending physicians who serve in residency programs may have patients attributed to them who were seen and followed by a resident physician. However, validation clinics determined that billing data can provide useful patient-level information to clinics including prescription fills, ER visits, and evidence of diagnostic tests.

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Asthma: Use of appropriate medications for people with persistent asthma	Dispensed at least one prescription for a preferred therapy during the measurement year*. Preferred asthma medications include anti-asthmatic combinations, antibody inhibitor, inhaled steroid combinations, inhaled corticosteroids, leukotriene modifiers, mast cell stabilizers, and methylxanthines.	**Asthma is defined by:** 1st measure (Total): Patients 5–64 years of age during the measurement year* and the year prior who were identified as having persistent asthma because of at least four asthma medication dispensing events, at least one ED visit with asthma as the primary diagnosis, at least one acute patient discharge with asthma as the principal diagnosis, or at least four outpatient asthma visits. Exclude from the eligible population all members diagnosed with emphysema or COPD. 2nd measure (Adult): Patients 19–64 years of age 3rd measure (Child): Patients 5–18 years of age
Coronary Artery Disease: Cholesterol management (LDL test) for patients with cardiovascular conditions	Had at least one LDL-C test during the measurement year*.	**Coronary artery disease is defined by:** 1. Patients 18-75 years discharged alive for AMI, CABG, or PTCA on or between July 1, 2009 – May 1, 2010; or 2. Patients 18-75 years who had a diagnosis of any ischemic vascular disease (IVD) July 1, 2009 – June 30, 2011. **Note**: AMI and CABG are from inpatient claims only.
Diabetes: HbA1C testing	Had at least one HbA1c test performed during the measurement year*.	**Diabetes is defined by:** 1. Patients 18-75 years of age who were dispensed insulin or a hypoglycemic/anti-hyperglycemic on an ambulatory basis; 2. Patients who had two face-to-face encounters with different dates of service in an outpatient setting or non-acute inpatient setting with a diagnosis of diabetes; or, 3. Patients with two† or more face-to-face encounter in an acute inpatient or emergency room setting with a diagnosis of diabetes. **Exclusions**: Patients with gestational diabetes, steroid-induced diabetes, or polycystic ovaries. *† The NCQA HEDIS definition requires only a single face-to-face encounter in an acute inpatient or emergency room setting with a diagnosis of diabetes. Based on clinic chart review results, Quality Corp modified the definition to require two or more face-to-face encounters beginning with Fall 2012 reporting. The modified definition is expected to impact less than 2.5% of patients identified in the measure.*
Diabetes: LDL-C test	Had at least one LDL-C screening test done during the measurement year*.	
Diabetes: Eye exam (retinal) performed	Had an eye screening for diabetic retinal disease. This includes those diabetics who had a retinal or dilated eye exam by an eye care professional (optometrist or ophthalmologist) during the measurement year*.	
Diabetes: Evidence of nephropathy assessment, treatment, or prevention	Screening for nephropathy or evidence of nephropathy during the measurement year*. Evidence of nephropathy includes a nephrologist visit, a urine macroalbumin test as documented by claims, and/or treatment with ACE inhibitor/ARB therapy.	

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Depression: Antidepressant medication management: acute phase	Patients who remained on an antidepressant medication for at least 84 days (12 weeks) as determined by prescription fills.	**Depression is defined by:** Patients aged 18 and older diagnosed with a new episode of major depression during the measurement year* and prescribed antidepressant medication. **Exclusions:** Patients who had an acute inpatient stay with a principal diagnosis of mental health or substance abuse during the 245 days after the episode start date. Patients with brief depressive reaction are excluded since the diagnosis includes grief reaction.
Depression: Antidepressant medication management: continuous phase	Patients who remained on an antidepressant medication for at least 180 days (6 months) as determined by prescription fills.	
Breast Cancer Screening	Women who had a mammogram during the measurement year* or the year prior. *Note: The U.S. Preventive Services Task Force released updated guidelines in November 2009 that do not recommend biennial screening mammography for women under age 50 years. Quality Corp recognizes that the HEDIS Breast Cancer Screening measure for the current measurement year (1/1/11 – 12/31/11) has not been updated to reflect the new recommendations. Quality Corp's Measurement and Reporting Committee will evaluate appropriate options for future rounds of reporting.*	**Women eligible for breast cancer screening include:** Women 40-69 years of age. **Exclusions:** Women who had a bilateral mastectomy or 2 separate mastectomies billed in 2005 – June 2011.
Cervical Cancer Screening	Women who had a Pap test during the measurement year* or the two years prior. *Note: The U.S. Preventive Services Task Force released updated guidelines in March 2012 that allow for a five year interval between cervical cancer screenings, when administered in combination with HPV testing, for women aged 30-65 years. The current measurement year (1/1/11 – 12/31/11) precedes the new guidelines. Quality Corp's Measurement and Reporting Committee will evaluate appropriate options for future rounds of reporting.*	**Women eligible for a Pap test include:** Women 21-64 years of age. **Exclusions**: Women who had a hysterectomy billed in 2005 – June 2011.
Chlamydia Screening	Women who had a Chlamydia test during the measurement year*.	**Women eligible for a Chlamydia screen include:** Sexually active women 16-24 years of age. Sexually active women are identified by either having filled a prescription for contraceptives during the measurement year* or had at least 1 claim with a code to identify sexually active women. **Exclusions:** Women who had a pregnancy test during the measurement year followed within 7 days by either a prescription for Accutane or an x-ray are excluded.

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Well-Child Visits in the First 15 Months of Life	1st measure: Children who had 5 or more well-child visits with a PCP during their first 15 months of life. Note: The PCP does not have to be the practitioner assigned to the child. 2nd measure: Children who had 6 or more well-child visits with a PCP during their first 15 months of life. *(Note: This is the standard HEDIS measure.)* Note: The PCP does not have to be the practitioner assigned to the child.	**Eligible children are defined by:** Children aged 15 months anytime during the measurement year*.
Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life	Children who had at least one well-child visit with a PCP during the measurement year*. Note: The PCP does not have to be the practitioner assigned to the child.	**Eligible children are defined by:** Children aged 3-6 years as of December 31 of the measurement year*.
Appropriate Testing for Children with Pharyngitis	Children who had a group A streptococcus test in the seven-day period starting three days prior to the episode date to three days after the episode date.	**Eligible children are defined by:** Children aged 2 years as of July 1, 2010 to 18 years as of June 30, 2011 who had an outpatient or ED visit with only a diagnosis of pharyngitis and a dispensed antibiotic for that episode of care. **Exclusions:** Children who received more than one diagnosis on the episode date. Children who were dispensed antibiotics more than three days after the episode date. Children who were dispensed a new or refill antibiotic prescription within the 30 days prior to the episode date, or still had an active antibiotics prescription from more than 30 days prior.
Use of Imaging Studies for Low Back Pain	Patients on whom an imaging study was not conducted on or within the 28 days following the episode date.	**Low back pain is defined by:** Patients aged 18-50 during the measurement year* who had an outpatient or ED encounter with a primary diagnosis of low back pain. **Exclusions:** Patients with a low back pain diagnosis during the 180 days (6 months) prior to the episode date. Patients for whom an imaging study in the presence of low back pain is clinically indicated: cancer anytime in the patient's medical history; recent trauma, intravenous drug use, or neurological impairment within 12 months of the episode date.

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Generic Prescription Fills: Statins	Number of prescription fills for statins identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of statins, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Quality Corp is investigating the relevance of the four generic prescription fill measures for pediatric care and the availability of suitable generic options for children among these drug classes. Quality Corp's Measurement and Reporting Committee is also considering whether an alternative drug class(es) would be more relevant for measuring generic prescription fills in the pediatric population.*
Generic Prescription Fills: SSRIs and other Second Generation Antidepressants	Number of prescription fills for second generation antidepressant prescriptions identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of second or third generation antidepressants, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. Includes SSRIs, SNRIs and DNRIs. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*
Generic Prescription Fills: PPIs	Number of prescription fills for PPI prescriptions identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of proton pump inhibitors, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*
Generic Prescription Fills: NSAIDs	Number of prescription fills for NSAID prescribing events identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of non-steroidal anti-inflammatory drugs, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Potentially Avoidable ED Visits, % of Total	The total number of emergency department visits with a primary diagnosis code that appears on California MediCal's list of Avoidable ICD-9 Diagnosis Codes for ED Care (see link below), among the eligible population. Link to MediCal Avoidable Visits ICD-9 diagnosis codes – see Appendix A: http://www.dhcs.ca.gov/dataandstats/reports/Documents/MMCD_Qual_Rpts/EQRO_QIPs/CA2010-11_QIP_Coll_ER_Remeasure_Report_F1.pdf	1st measure (Adult): The total number of emergency department visits among the patients aged 18 years and older. 2nd measure (Child): The total number of emergency department visits among patients aged 1-17 years. **Exclusions (Adult and Child):** Visits that result in an inpatient stay. Patients with mental health and chemical dependency services. Infants less than 12 months of age on the date of the emergency department visit.
Potentially Avoidable ED Visits, Rate per 100 Patients (See Notes)	The total number of emergency department visits with a primary diagnosis code that appears on California MediCal's list of Avoidable ICD-9 Diagnosis Codes for ED Care (see link below), among the eligible population. Link to MediCal Avoidable Visits ICD-9 diagnosis codes – see Appendix A: http://www.dhcs.ca.gov/dataandstats/reports/Documents/MMCD_Qual_Rpts/EQRO_QIPs/CA2010-11_QIP_Coll_ER_Remeasure_Report_F1.pdf	1st measure (Adult): The number of patients aged 18 years and older enrolled for the entire last month of the measurement year (December 2011). 2nd measure (Child): The number of patients aged 1-17 years and older enrolled for the entire last month of the measurement year (December 2011). **Exclusions (Adult and Child):** Visits that result in an inpatient stay. Patients with mental health and chemical dependency services. Infants less than 12 months of age on the date of the emergency department visit. *Notes: In medical group reports, Quality Corp reports results as ED visits per 100 patients to facilitate interpretation by medical groups and providers. In other reporting, Quality Corp may scale results to ED visits per 100,000 patients.*
Hospital Admissions for Ambulatory-Sensitive Conditions, Rate per 100 Patients (See Notes)	Overall Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the conditions listed in the Acute/Chronic Composite measures (below). Acute Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the following: • PQI #10 – Dehydration • PQI #11 – Bacterial Pneumonia • PQI #12 – Urinary Tract Infection	The number of patients aged 18 years and older enrolled for the entire last month of the measurement year (December 2011). **Exclusions:** Maternal/neonatal discharges. Transfers from another institution.

	Chronic Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the following: • PQI #1 – Diabetes Short-Term Complications • PQI #3 – Diabetes Long-Term Complications Admission Rate • PQI #5 – Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults • PQI #7 – Hypertension Admission Rate • PQI #8 – Congestive Heart Failure (CHF) • PQI #13 – Angina without Procedure • PQI #14 – Uncontrolled Diabetes • PQI #15 – Asthma in Younger Adults • PQI #16 – Rate of Lower-Extremity Amputation Among Patients with Diabetes	*Notes: In medical group reports, Quality Corp reports results as hospital admissions per 100 patients to facilitate interpretation by medical groups and providers. In Quality Corp's 2012 statewide report,* Information for a Healthy Oregon, *results are reported as hospital admissions per 100,000 patients, following the Agency for Healthcare Research and Quality (ARHQ) methodology.*

*This report is based on the measurement year January 1 – December 31, 2011.

Separation Page

OREGON HEALTH CARE QUALITY CORPORATION
A nonprofit partnership for quality improvement

Quality Corp Measures – 2013 Current and Future

Based on Measurement & Reporting Team recommendations Feb 2013

CURRENT MEASURE CONCEPTS (prior to 2013)

Primary Care	Hospital
Diabetes Screenings (4) Eye exam; LDL-C screening; Kidney disease test; HbA1c screening	CMS surgical safety (10)
Women's Preventive Care (3) Breast cancer screening; Cervical cancer screenings; Chlamydia screenings	CMS process of care (1 overall, 8 heart attack, 5 heart failure, 7 pneumonia)
Appropriate Asthma Medications (3) Total (5-64 yrs); Adult (19-64 yrs)*; Child (5-18 yrs)*	Patient experience – (Hospital CAHPS)
Antidepressant Medication Management (2) Acute phase**; Continuous phase**	
Cardiovascular disease	
Well-Child Visits (3) 0-15 mths, 5+ visits*; 0-15 mths, 6+ visits; 3-6 yrs	
Appropriate LBP imaging	
Adult Generic Prescription Fills (2) SSRIs; Statins	
Appropriate Antibiotic Use	
Potentially Avoidable ED Visits*	
Ambulatory-Sensitive Hospital Admissions*	

** Indicates measure is reported privately to medical groups/providers only; clinic scores not on Quality Corp's public consumer website.*
*** Indicates measure has been retired from medical group reports, but continues to be tracked for community-wide reporting*

NEW MEASURE CONCEPTS (new in 2013)

Primary Care	Hospital
Readmissions*	Readmissions
Patient experience (NCQA CG-CAHPS)	Hospital-acquired infections
	Maternity Care

** Indicates measure is reported privately to medical groups/providers only; clinic scores not on Quality Corp's public consumer website.*

OTHER MEASURE CONCEPTS

Project-Related / Developmental

- Treatment for CHF, COPD
- Treatment for LBP
- Unnecessary imaging – CT/MRI for LBP
- Opioid use from ED
- Cost of care

Project-Related / EMR Pilot

- Obesity/physical activity
- Tobacco use
- Cardiovascular disease (outcomes)
- Immunizations
- Diabetes (outcomes)

Future Development

- Confidence in managing chronic conditions / self-management
- Care consistent with end of life wishes
- Behavioral health / mental health coordination / substance abuse
- Cardiac diagnostics and percutaneous intervention
- Care transitions / care planning
- Shared info and accountability
- Inappropriate medication use (elderly)
- Adolescent well-child / immunizations
- HIV screenings
- Colonoscopies

Separation Page

INSTRUCTIONS FOR REVIEWING DATA AND PROVIDING FEEDBACK

OREGON HEALTH CARE QUALITY CORPORATION

Overview

The Oregon Health Care Quality Corporation (Quality Corp) is dedicated to improving the quality and affordability of health care in Oregon by leading community collaborations and producing unbiased information. The goal of Quality Corp's measurement and reporting initiative is to improve patient care by coordinating and consolidating quality and utilization information. These reports are based on aggregated data from eight commercial plans, two Medicaid managed care plans and Medicaid fee-for-service.

Though administrative claims data are not ideal tools for quality improvement, they can provide some basic information for a large segment of the Oregon health care delivery network. These data provide comparative assessments and statewide benchmarks that are not otherwise available. In addition, the doctors, nurses and medical group administrators who have helped design this effort have emphasized that providing medical group, clinic, provider and patient-level detail is essential if claims information is to be valid, trusted and useful. The purpose of this document is to provide instructions for accessing and viewing these detailed data, checking data for accuracy and requesting reconsideration of data if applicable. This document includes the following sections:

- **Section 1: Why Should Patient-Level Data Be Checked?**
- **Section 2: How Data Feedback Will Be Used By Quality Corp**
- **Section 3: How to Access Reports Through Quality Corp's Secure Online Portal**
- **Section 4: How to View, Sort, Export and Print Online Reports**
- **Section 5: Process for Checking and Correcting Data**
- **Section 6: How to Provide Feedback on Quality Corp's Measurement Process**
- **Section 7: How to Request Quality Improvement Support**
- **Section 8: How to Find More Help and Technical Information**

Important note: A number of medical groups plan to use Quality Corp data for other reporting initiatives, including OHA Patient-Centered Primary Care Home program certification, CMS Comprehensive Primary Care Initiative gain sharing, health plan contracting, etc. Given the expanded uses of the data, Quality Corp is offering an **optional medical group review period during May 1 - 31, 2013. Groups interested in having their scores reviewed or re-calculated must submit feedback through the secure portal as well as submit their request to Quality Corp by May 31.** Note access to the secure portal is required for this process.

Section 1: Why Should Patient-Level Data Be Checked?

Medical group administrators and providers may choose to review patient medical records to validate and update the data provided in this report. This is an optional process. Patients eligible for a measure are included in patient data with an indicator showing whether or not there was a record of the service.

If you are unsure whether your group has already obtained access to the secure portal, please contact Quality Corp at 503-241-3571 or by email: info@q-corp.org. Groups that have not obtained access can download and complete the necessary legal agreements by following the instructions below. Also, please note that Quality Corp is moving toward electronic reporting only.

1. First, choose a single designee who will have control of and responsibility for managing usernames and passwords within the medical group. Please note that the designated administrator will have access to the data for all clinics, primary care providers and patients in the medical group. This designated administrator will complete the registration process, be authorized by Quality Corp to act on the behalf of providers within the medical group, and be responsible for ensuring that information is managed appropriately by the medical group. Once registered, the designated administrator will be able to assign other people in the medical group a username and password so they may also access the site. Additional user accounts may be set up with full or limited access to the reports (see Section 3).
2. Go to http://q-corp.org/quality-reports/providers.
   a. Download and complete the "Participating Provider Medical Group Agreement," found under "Fill out these forms." This agreement between the medical group and Quality Corp identifies the medical group administrator and establishes the general terms for accessing secure data for the medical group, clinics and primary care providers.
   b. Download and complete the "Business Associate Agreement" (BAA), found under "Fill out these forms." The purpose of the BAA is to authorize the exchange of data, including protected health information (PHI), between the medical group and Quality Corp's data services vendor, Milliman, Inc. Quality Corp contracts with Milliman to receive, aggregate and analyze patient data supplied by participating health plans and data suppliers. Milliman manages the secure website and the security of the data.
3. The "Participating Provider Medical Group Agreement" and "Business Associate Agreement" (BAA) must be signed by an individual authorized to agree to the terms and conditions of each document.
4. Fax, email or mail all pages of the completed and signed agreements to Quality Corp.

   Email: info@q-corp.org
   Fax: (503) 972-0822
   Mail: Oregon Health Care Quality Corporation
   Attn: Karri Benjamin
   520 SW 6th Ave, Suite 830
   Portland, OR 97204
5. Quality Corp staff will verify the identity of the designated administrator and authorize Milliman to extend secure portal privileges. The administrator will receive confirmation of registration after Milliman has signed the BAA and Quality Corp has signed the participation agreement. The designated administrator will receive signed pages of both documents with a confirmation summary page.
6. After registration is complete, the administrator will receive a username via email from Milliman and a password in a separate email. Only Milliman and the designated administrator will know the username and password. *For help logging into the secure site, to retrieve a forgotten username or password, or for other technical questions, please call 877-514-8465 or email medinsight.support@milliman.com.*

To **print a report**, simply select "print" after you export your data. For example, you can export to a PDF file and then print. For many providers and clinics, downloading and printing may be the easiest method for using the reports.

If you are a clinic manager or medical group manager, you can download all of the patient information for your clinic or medical group by selecting "Patient Export by Group and Measure" or "Patient Export by Clinic and Measure" under the "Export Data" section of the main reports page.

Section 5: Process for Checking and Correcting Data

As you begin checking data, it will be helpful to refer to the "Quality Corp Measures Description and Methodologies" document, available at http://q-corp.org/quality-reports/providers, for information on measure definitions and patient inclusion criteria.

Feedback at the patient level must be made through the secure website. You may wish to export and print the patient-level data to compare against your internal files (see Section 4 for instructions), but you must return to the secure website to provide feedback. While providing patient-level feedback through the secure site may be laborious, it ensures that patient confidentiality is strictly maintained.

- Start by examining the attached "List of Feedback Options at the Provider and Patient Levels." These options represent the type of feedback you can provide through the website.
- Verify patient-level data. For each patient, consider the following:
    a. Is this patient correctly attributed to the provider?
    b. Does the patient belong in the measure (denominator)? Refer to "Quality Corp Measures Description and Methodologies" for exclusion criteria.
    c. Do your records indicate that the patient received the service? (Yes/no) Does this match the data in Quality Corp's reports?
- To submit feedback on a patient, click on the red exclamation point (!) to the right of the patient information. A new window will pop up. Choose the proper response from the drop-down box, and include a date with your response, if applicable. For situations not included in the drop-down menu, use the comments section.
- If the same error is found repeatedly, you may simply make a note of it and move on. You do not have to record this error for every patient, as you may have identified a systemic problem that needs to be resolved.

Additional tips – The following are generally not acceptable grounds for correction:

- Patient demanded service.
- Provider is not responsible for managing the services being measured.
- Service or screening was performed, but not during the defined measurement year.
- Disagreement with a measurement specification, or with the data collection process and/or method.

List of Feedback Options at the Provider and Patient-Levels

Provider-level issues

- This provider left the medical group. (Please give termination date in date field.)
- This provider has never belonged to the medical group or clinic.
- This provider is a specialist (not a primary care provider); and therefore, shouldn't be assigned patients.
- The wrong provider is assigned to the patient, but patient has been seen in the clinic.

Patient-level issues

- Patient is unknown to clinic.
- Patient was not seen during the two year look-back period (measurement year[i] and year prior).
- Patient does not belong in the measure. (Examples: not a diabetic, is not in the proper age range) Explain in comments.
- Patient belongs in the measure and DID have screening or service. (Give date of service in date field.)
- Patient belongs in the measure, did have screening or service, but claim was DENIED. (Give date of service in date field.)
- Patient did not have screening or service – Medical record has no evidence of the screening or service.
- Other: Discrepancy reason doesn't appear on this list. (Please explain in the comments field below.)

Please refer to the *"Quality Corp Measures Description and Methodologies"* document for information on measure definitions and patient inclusion criteria.

[i] Quality Corp's current measurement year is July 1, 2011 – June 30, 2012. The two year look-back period is July 1, 2010 – June 30, 2012.

Separation Page

TECHNICAL APPENDIX

Information for a Healthy Oregon:
Statewide Report on Health Care Quality

July 2012

OREGON HEALTH CARE QUALITY CORPORATION
A nonprofit partnership for quality improvement

This technical appendix supplements the July 2012 release of *Information for a Healthy Oregon: Statewide Report on Health Care Quality* by the Oregon Health Care Quality Corporation (Quality Corp).

CONTENTS

Data Summary

Eight commercial plans, two Medicaid managed care plans and Medicaid fee-for-service contributed administrative medical and pharmacy claims data for this report[1]. Aggregated data also included claims from select Medicare Advantage plans. The data cover the period July 1, 2008 – June 30, 2011, with a measurement year of July 1, 2010 – June 30, 2011. Tables 1 and 2 provide an overview of the claims data submission on which this report is based, and Table 3 provides a summary of all data submissions to date along with concurrent Quality Corp achievements.

Table 1: Quality Corp Round 5 Data Submission Summary

Measurement year	July 1, 2010 – June 30, 2011
Round 5 data coverage period	July 1, 2008 – June 30, 2011
Data submission due date	October 31, 2011
Number of data suppliers	11
Number of unique patients in Round 5	3,281,911
Number of eligible patients as of June 30, 2011 (end of Round 5 measurement year)	1,968,674
Number of unique providers in Round 5	727,666
Total medical claim records submitted in Round 5	295.06 million
Total pharmacy claims submitted in Round 5	128.69 million

Table 2: Quality Corp Product Line Summary

	Oregon Total Health Insurance Enrollment 2011*	Quality Corp Member Months as of March 31, 2010	Percent of State Total of Covered Lives
Commercial—All lines	1,805,000	1,360,884	75.4
Medicare—Total	621,000	233,324**	37.6
Medicaid—Total (includes managed care and fee-for-service)	550,000	392,737	71.4

*Oregon data derived from Department of Consumer & Business Services' *Health Insurance in Oregon*, Jan 2012 <http://insurance.oregon.gov/health_report/3458-health_report-2012.pdf> and Oregon Health Plan managed care and fee-for-service enrollment data for June 2011 http://www.oregon.gov/OHA/healthplan/data_pubs/enrollment/2011/0611/fchp.pdf >.
**Quality Corp receives only Medicare Advantage claims.

Table 3: Quality Corp Data Submissions and Concurrent Achievements

Round	Measurement Year	Concurrent Achievements
1	Jan 1, 2007 – Dec 31, 2007	• 2009 Statewide Report • Launch of secure online provider portal • Development of primary care provider directory
2	Apr 1, 2008 – Mar 31, 2009	• Launch of consumer website, www.PartnerForQualityCare.org • Refreshed data on secure provider portal

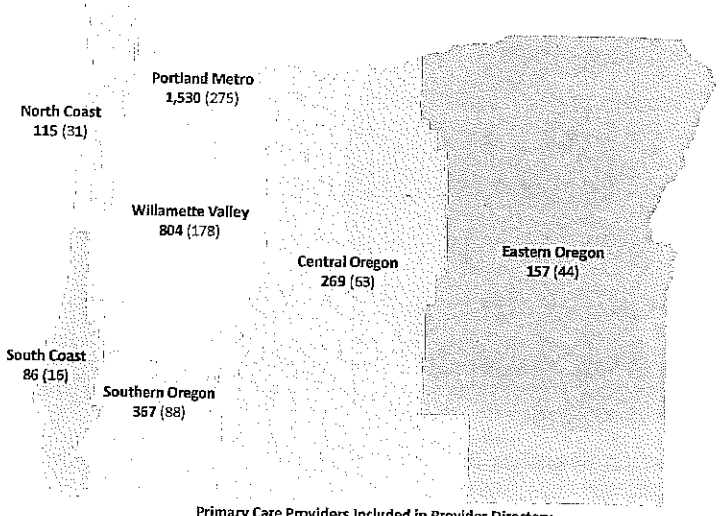
[1] The suppliers for this report that contributed data include: CareOregon, Oregon Division of Medical Assistance Programs, FamilyCare, Inc, Health Net of Oregon, Kaiser Permanente, LifeWise Health Plan of Oregon, ODS Health Plans, PacificSource Health Plans, Providence Health Plans, Regence BlueCross BlueShield and UnitedHealthcare. Tuality Healthcare has since joined the initiative.

3	Apr 1, 2009 – Mar 31, 2010	• 2011 Statewide Report • Refreshed data on consumer website • Refreshed data on secure provider portal • Launch of online provider roster tool, accessible via secure provider portal
4	Jan 1, 2010 – Dec 1, 2010	• Refreshed data on secure provider portal • Webinar *Using Quality Reports to Improve Health Care*, attended by 30+ medical groups on Jan 10, 2012
5	July 1, 2010 – June 30, 2011	• 2012 Statewide Report • Refreshed data on consumer website • Refreshed data on secure provider portal • Webinar *Public Reporting of Pediatric Measures* attended by 12+ medical groups on May 8, 2012
Anticipated 6	*Anticipated* Jan 1, 2011 – Dec 31, 2011	*Anticipated* • Refreshed data on secure provider portal • Other activities TBD

Provider Directory

Quality Corp works with medical groups to maintain a comprehensive provider directory for Oregon. The provider directory links practicing primary care providers with the clinics and medical groups where they work. This medical group-supplied information is used to attribute patients from claims data to the appropriate primary care provider and clinic for reporting. Primary care providers include family medicine, internal medicine, general practice, and pediatric physicians (MDs/DOs), nurse practitioners (NPs), and physician assistants (PAs). The provider directory currently includes information for 3,328 providers, representing about 80.7 percent of practicing primary care providers in Oregon. These providers work in 396 medical groups at 696 clinic sites throughout the state. The medical groups range in size from one to 44 clinics.

Geographic Distribution of Primary Care Providers and Clinics Included in Quality Corp's Provider Directory – July 2012



Primary Care Providers Included in Provider Directory
(Clinics Included in Provider Directory)

OREGON HEALTH CARE QUALITY CORPORATION

Provider Directory Expansion

With an eye toward public reporting and recognizing the unique challenges faced by small, often rural practices, the provider directory was initially developed in 2008 to include medical groups with four or more primary care providers. After three years of reporting and with multiple requests to understand the quality of care delivered by small practices in Oregon, Quality Corp expanded its provider directory during summer and fall 2011. This entailed an extensive outreach effort to medical groups with 1-3 primary care providers, as well as a handful of larger groups that previously had less than four providers but had now grown in size, were new since the directory's creation, or were "missed" during the initial outreach.

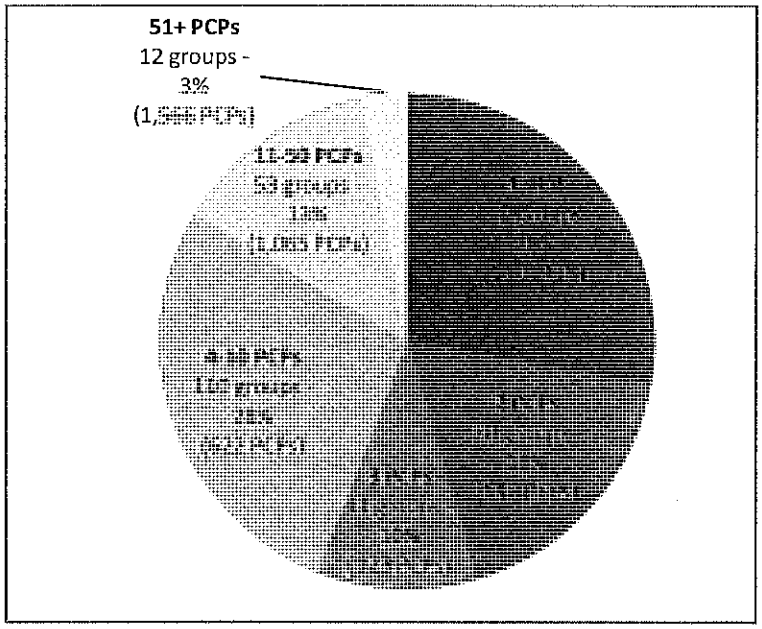
Table 4 displays the number of medical groups, clinics and practicing primary care providers in Quality Corp's provider directory at the time of the previous Statewide Report (February 2011) as well as the updated totals for the current Statewide Report (July 2012).

Table 4: 2011 Expansion of Quality Corp Provider Directory

	Feb 2011	July 2012	Increase (#)	Increase (%)
Medical Groups	141	396	255	181%
Clinics	388	696	308	79%
Providers (NP, PA, MD, DO)	2,751	3,328	577	21%

The majority of medical groups in Quality Corp's provider directory (56 percent) have 1-3 primary care providers, underscoring the benefit of expanding to include these smaller groups. Chart 1 illustrates the distribution of medical group sizes by number of practicing primary care providers. Note, a primary care provider (PCP) may practice at more than one clinic site.

Chart 1: Distribution of Medical Group Sizes – Quality Corp Provider Directory July 2012



OREGON HEALTH CARE QUALITY CORPORATION

Estimate of Completeness

Quality Corp estimates that as of July 2012, the provider directory includes approximately 80.7 percent of practicing primary care providers in Oregon. This estimate is based on dividing the number of MDs, DOs and PAs in the provider directory (2,834) by the estimated total number of actively practicing MDs, DOs and PAs in Oregon (3,511). NPs were not included in this calculation because an estimate of the total number of practicing NPs was not available. See Table 5 for more detail.

Table 5: Totals by Provider Type

	Quality Corp	Oregon Total	% of Total
NP	494	UNK	n/a
PA	307	389	78.9%
MD/DO	2,527	3,122	80.9%
Total	3,328	n/a	n/a

UNK = Unknown; the OMB file does not include information on Nurse Practitioners

Quality Corp estimates the total number of actively practicing primary care providers based on licensing data provided by the Oregon Medical Board (OMB). The OMB file includes information on provider license type, practice location, and specialty. Quality Corp subtracts 11 percent from the active physician total to estimate the number of active physicians in the state; this is done to account for physicians who have moved out of state or do not provide direct patient care in Oregon. Another 15 percent is subtracted to account for physicians working as hospitalists or in hospital inpatient settings, emergency departments, urgent care clinics, nursing facilities, or other settings of care that are not medical group/clinic-based. This figure is based on the Oregon Health Authority Division of Medical Assistance Programs (DMAP) Physician Workforce Survey.

To maintain its provider directory, Quality Corp contacts each medical group at least annually to ensure that provider rosters are kept up to date.

Clinics

In this initiative, a *clinic* is defined as a doorway or place with a physical address that patients identify as where they receive care. (The term *doctor's office* is used in place of the term *clinic* on the public website for easier consumer understanding.) Only clinics with four or more practicing primary care providers and at least 25 patients appropriate for inclusion in a measure have scores reported on the public consumer website, www.PartnerForQualityCare.org. For more information on the inclusion specifications for each measure, see Table 12 at the end of this appendix. Clinics with less than four practicing primary care providers receive reports privately for their own internal quality improvement efforts, and have the option to opt in to public reporting. When a medical group is added to Quality Corp's provider directory, its clinics receive one round of private reports before the public reporting criteria are applied.

Quality Corp strives to make its provider directory as complete as possible for clinics across the state. Table 6 demonstrates that 60 percent of the clinics in Quality Corp's provider directory are located outside the Portland Metro region.

Table 6: Clinic Locations by Region

Region	Number of Reported Clinics	Percent of All Reported Clinics
Central Oregon	64	9.2
Eastern Oregon	44	6.3
North Coast	31	4.5
Portland Metro	275	39.5
South Coast	16	2.3
Southern Oregon	88	12.6
Willamette Valley	178	25.6
Total	696	100.0

Providers

Quality Corp engages in a multi-faceted measurement approach to include recommendations, expertise and feedback from practicing physicians, nurses and medical group administrators with a focus on improving the initiative and ultimately patient care. Many of the measurement and reporting methods are based on initial work by Quality Corp's Clinical Work Group and continuing work by the Measurement and Reporting Committee, comprised of practicing physicians, physician leaders, nurse leaders, consumers, health plan analysts and administrators, policymakers and purchasers. Physicians and other primary care practitioners are represented at all levels of decision-making and include representation from these professional organizations:

- Oregon Medical Association
- Oregon Academy of Family Physicians
- Oregon Pediatric Society
- As well as many medical groups and independent practice associations (IPAs)

Quality Corp's reports were expanded to include measures on pediatric care during the April 1, 2010 – March 31, 2011 measurement year. As a result, many pediatricians received reports for the first time in November 2011.

Table 7 provides the current (July 2012) breakdown of provider types in the provider directory.

Table 7: Provider Types in Clinics

Provider Type	Percent of Total Providers
Adult and family primary care physician	62.9
Nurse practitioner or physician assistant	21.8
Pediatrician	15.3

Patient Characteristics

The data set for the current measurement period consists of aggregated administrative claims from 11 of Oregon's largest health plans and Medicaid and represents care for two million patients who were members of at least one participating health plan. Of the 1,591,583 patients that were continuously enrolled during the measurement year July 1, 2010 – June 30, 2011, approximately 44 percent were members of more than one plan.

Despite the large number of claims in the data set, some providers and clinics may have only a small number of patients for some measures. Depending on the look back period for each measure, between 19.8 – 51.8 percent of patients were "lost" because only patients who were continuously enrolled in health plans during the measurement period were counted. For more information on how continuous enrollment affects patient eligibility, see the section entitled "Continuous Enrollment" beginning on page 8.

Additionally, some patients were not captured in the measures because: 1) their condition may not have been coded in a claim, 2) they are not members of a participating health plan, 3) they do not meet extremely strict inclusion criteria, or 4) they were attributed to a different provider. The denominators for these measures were designed to include only patients with a very high likelihood of needing the services being measured; therefore the care of many patients with asthma, depression or vascular disease is not reflected. In some cases, the provider may not have had a full-time, full-year experience at the medical group during the measurement year (July 1, 2010 – June 30, 2011). The effect of these issues is even more striking when examining data from a single plan.

Measures

Information for a Healthy Oregon presents a variety of quality and resource use measures. Ambulatory quality measures are included for specific primary care recommendations for diabetes care, women's preventive care, other chronic disease care (asthma, depression and heart disease) and pediatric care. Ambulatory resource information is reported for appropriate low back pain imaging, appropriate antibiotic use and generic prescription fills. Hospital resource use measures include potentially avoidable ED visits and hospital admissions for ambulatory-sensitive conditions.

The measures are calculated using administrative claims sent by medical groups to health plans for payment. Claims data tell us that a medical test was billed, but not its value or outcome. Thus, the measure results reflect whether providers within clinics recommend care and whether patients follow through with recommendations.

Measure Selection and Accreditation

Quality Corp's Measurement and Reporting Committee identified principles for measure selection and the first set of Oregon measures. To ensure measures adhered to national standards set by the National

Quality Forum (NQF), the Committee initially chose measures from the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set[2] (HEDIS), a subset of the measures endorsed by the NQF and the most widely-used set for ambulatory care. Additional measures have been added since the first round of reporting in 2009, and measures will continue to be tested and added or deleted as the effort matures.

A small subset of the measures in this report deviates from HEDIS:

- The four generic drug fill measures (NSAIDs, PPIs, SSRIS and other second generation antidepressants, and Statins) were developed by Milliman and have been used by the Puget Sound Health Alliance. The adoption of these measures reflect Quality Corp's expanding interest in measuring resource use and efficiency, and will likely become part of the resource use reports that are currently under development.
- The potentially avoidable ED visit measures were developed by the MediCal Managed Care Division of the California Department of Healthcare Services.
- The measures of hospital admissions for ambulatory-sensitive conditions are among the set of the US Agency for Healthcare Research and Quality's (AHRQ) Prevention Quality Indicators (PQIs).
- Though not included in this report, Quality Corp's medical group reports include a measure of the percentage of children that received five or more well-child visits during the first 15 months of life. This is a variation of the standard HEDIS measure, which reports the percentage of children who received six or more well-child visits. Input from pediatricians during the measure selection process suggested that an additional measure for children receiving five or more visits would be useful, as there are many circumstances under which a child may not receive a sixth visit, and five visits still demonstrate a child is being followed by a primary care provider.

See Table 10 for a complete list of measures and indicators of which measures are HEDIS.

Continuous Enrollment

HEDIS performance measures require continuous enrollment in a health plan as part of patient eligibility criteria. These criteria were developed to ensure that patients are enrolled long enough to have an opportunity to establish a relationship with a primary care provider and receive quality care. Continuous enrollment and an allowable gap in enrollment are defined for each measure.

Excluding patients who did not experience continuous enrollment can result in currently enrolled patients being excluded from a measure. Table 8 demonstrates how the continuous enrollment criteria reduced the eligible patient population during this reporting period, depending on the look-back period for a particular measure. For example, 81 percent of patients met the continuous enrollment criteria for measures with a one year look-back period (e.g. diabetes measures), while only 48 percent of patients

[2] HEDIS® is a registered trademark of the National Committee for Quality Assurance (NCQA). The HEDIS benchmarks contained herein are owned and copyrighted by NCQA and are included in this publication with the permission of NCQA. The HEDIS benchmarks pertain to performance measured at the health plan level and do not represent any standard of medical care. The benchmarks are provided "AS-IS" without any warranty of any kind including but not limited to any warranty of accuracy or fitness for a particular purpose. ©2011 National Committee for Quality Assurance. All rights reserved.

met the continuous enrollment criteria for the cervical cancer screening measure, which has a three year look-back period. Within the aggregate data, Quality Corp was able to track patients that moved from one participating health plan or Medicaid supplier to another, which results in a greater number of patients eligible for inclusion in the measures.

Table 8: Effect of Continuous Enrollment Criteria on Eligible Patient Population

Look-Back Period for Measure	Number of Eligible Patients	Percent of Total* Patients
One Year	1,591,583	80.8
Two Years	1,171,771	59.5
Three Years	949,828	48.2

*Total eligible patients as of 6/30/2011 (end of Round 5 measurement year) are 1,968,674.

Assigning Patients to Providers (Attribution)

Assigning the correct patients to providers is an important part of developing accurate measurement reports. The consensus among Quality Corp's Committees is that the method for attributing patients to a primary care provider must be fair, consistent and transparent.

Patients are assigned to a primary care provider (PCP) contained in the Quality Corp provider directory. The logic model for attribution then adheres to the following formula:

- Use the health plan designated PCP when that exists and the information is kept up to date (one plan).
- Otherwise, use the PCP the patient has seen the most across the two-year attribution period (July 1, 2009 – June 30, 2011).
- A patient will be attributed to a single PCP.
- If there is a tie, use the most recently seen PCP.

Patients were assigned only to primary care providers included in Quality Corp's provider directory. If a patient received care solely from specialists, urgent care clinics or other providers not included in the provider directory they were not assigned a primary care provider (*unattributed*). In addition, if a claim did not specify the correct CPT codes or provider, the patient is not attributed. For example, unattributed patients for the cervical cancer screening measure might include healthy young women that only receive care from an OB/GYN.

Attribution of patients for the appropriate low back pain imaging measure is a unique exception to the above attribution model. During the measure validation process, Quality Corp staff and the Measurement and Reporting Committee recognized that the patient's primary care provider may not be the provider who ordered the image, and claims data do not identify the ordering provider. Additional research showed that of 1,621 patients with low back pain who had an inappropriate image taken (image within 28 days of the initial diagnosis), almost a third of the images were ordered by someone other than the patient's PCP. Furthermore, almost two-thirds of the time someone other than the patient's PCP made the initial low back pain diagnosis. A look at the provider specialties as listed in the

image claims revealed that many of the diagnoses came from orthopedists, chiropractors and other non-primary care providers. For this reason, a "Specialty Attribution" method was used for this measure, which follows the same logic as outlined above but allows for low back images to attribute to either a primary care provider or a provider from a list of designated specialties. The following specialties are included in the available attribution pool for the low back pain imaging measure:

- Chiropractor
- Family Medicine
- General Practice
- Internal Medicine
- Naturopathy
- Nurse Practitioner & Physician Assistant
- Orthopaedic Surgery
- Osteopathy
- Physical Medicine & Rehabilitation
- Women's Health

Overall, there was a 33 percent loss of patients who were unattributed to a primary care provider (Table 9). In the case of measures that share exactly the same population of patients – e.g. the four diabetes measures – only one of the measures is considered so as to not give one measure type a disproportionate weight in the calculation of the overall percentage of unattributed patients. Note, it is possible for a patient to be included in more than one measure – for example, a female patient may be diabetic and may also be eligible for a breast cancer screening. While Quality Corp's attribution methods do attribute fewer patients overall (resulting in smaller denominator sizes), they have resulted in providers confirming 95 percent accuracy of the patients assigned to them.

Table 9: Summary of Patient Attribution to Practitioner by Measure

Measure	Attributed Patients	Unattributed Patients	Percentage Unattributed
Appropriate Low Back Pain Imaging	18,964	12,826	40.3
Appropriate Strep Tests	11,981	4,113	25.6
Asthma Medication	8,046	2,773	25.6
Breast Cancer Screening	171,812	91,202	34.7
Cervical Cancer Screening	187,972	108,637	36.6
Chlamydia Screening	30,676	18,261	37.3
Cholesterol Screening	10,005	4,616	31.6
Antidepressant Medication	9,133	3,692	28.8
Diabetes Measures	58,805	25,687	30.4
Well-Child Visits 0-15 mths	15,887	3,908	19.7
Well-Child Visits 3-6 yrs	71,840	24,000	25.0
Total	595,121	299,715	33.4

For measurement year July 1, 2010 – June 30, 2011.

Public vs. Private Measures

Table 10 provides a complete list of measures in Quality Corp's medical group reports, including an indicator of which measures are HEDIS. Additional columns provide the month/year measures were included in Quality Corp's reports, along with information on how measures were reported (privately to medical groups and providers only versus reported publicly at the clinic level on Quality Corp's

consumer website www.PartnerForQualityCare.org). Note this report contains several measures that are not reported publicly on the consumer website; they are reported here in aggregate or as blinded clinic results.

Quality Corp's first round of reports to medical groups included quality information for adult primary care clinics on eleven measures of care. Additional measures on ambulatory resource use, hospital resource use and pediatric care have been added over time. New measures are always reported privately to medical groups and providers for at least one round before clinic level results are included in public reports. In addition, Quality Corp's Measurement and Reporting Committee assesses measure accuracy and the appropriateness and usefulness of measures for public reporting prior to approving their inclusion on the public website.

When Quality Corp's consumer website was initially launched in February 2010, only quality information for adult primary care clinics on nine measures of care was originally posted. In January 2012, the Measurement and Reporting Committee approved the addition of eight new measures to the list of those publicly reported during the July 2012 consumer website refresh. These eight measures were included in two rounds of private reporting to medical groups – February 2011 and December 2011. Measures will continue to be tested and added or deleted as the effort matures.

Medical groups have the opportunity to review their data and provide feedback through Quality Corp's secure online portal prior to the public release of results. For the July 2012 release, the medical group review period was the month of May 2012. Quality Corp has established policies for groups that wish to have their data reconsidered and for groups that believe they have special circumstances that should exclude them from public reporting. These policies are available at q-corp.org/quality-reports/providers.

Table 10: Complete List of Quality Corp Ambulatory Measures

HEDIS	Area of Care / Measure	June 2009	Feb 2010	Feb 2011	Dec 2011	July 2012
	Diabetes Care					
√	– Eye Exam	Private	**Public**	**Public**	Private	**Public**
√	– HbA1c Test	Private	**Public**	**Public**	Private	**Public**
√	– LDL-C Test	Private	**Public**	**Public**	Private	**Public**
√	– Kidney Disease Test	Private	**Public**	**Public**	Private	**Public**
	Women's Preventive Care					
√	– Breast Cancer Screening	Private	**Public**	**Public**	Private	**Public**
√	– Cervical Cancer Screening	Private	**Public**	**Public**	Private	**Public**
√	– Chlamydia Screening	Private	**Public**	**Public**	Private	**Public**
	Other Chronic Disease Care					
√	– Heart Disease Cholesterol Test	Private	**Public**	**Public**	Private	**Public**
√	– Antidepressant Medication – 12 Weeks	Private	Private	Private	Private	Private
√	– Antidepressant Medication – 6 Months	Private	Private	Private	Private	Private
√	– Asthma Medications – Total (Age 5-50)	Private	**Public**	**Public**	Private	**Public**

√	– Asthma Medications – Adult (Age 12-50)					Private
√	– Asthma Medications – Child (Age 5-11)					Private
	Ambulatory Resource Use					
√	– Appropriate Strep Tests			Private	Private	**Public**
√	– Appropriate Low Back Pain Imaging			Private	Private	**Public**
	– Generic Prescription Fills: NSAIDs – Adults			Private	Private	**Public**
	– Generic Prescription Fills: PPIs – Adults			Private	Private	**Public**
	– Generic Prescription Fills: SSRIs – Adults			Private	Private	**Public**
	– Generic Prescription Fills: Statins – Adults			Private	Private	**Public**
	– Generic Prescription Fills: NSAIDs – Children			Private	Private	Private
	– Generic Prescription Fills: PPIs – Children			Private	Private	Private
	– Generic Prescription Fills: SSRIs – Children			Private	Private	Private
	– Generic Prescription Fills: Statins – Children			Private	Private	Private
	Pediatric Care					
	– Well-Child Visits 0-15 Months, 5 or More			Private	Private	Private
√	– Well-Child Visits 0-15 Months, 6 or More			Private	Private	**Public**
√	– Well-Child Visits 3-6 Years			Private	Private	**Public**
	Hospital Resource Use					
	– Potentially Preventable ED Visits					Private
	– Potentially Preventable ED Visits					Private
(AHRQ)	– Hospital Admissions for Ambulatory-Sensitive Conditions – Acute Composite					Private
(AHRQ)	– Hospital Admissions for Ambulatory-Sensitive Conditions – Chronic Composite					Private
(AHRQ)	– Hospital Admissions for Ambulatory-Sensitive Conditions – Overall Composite					Private

Calculation of Medical Group, Clinic and Provider Scores

Quality Corp distributes reports to all medical groups and providers in Quality Corp's provider directory, regardless of the number of patients in the report. Reports contain data displays and confidence intervals to help with interpretation when case numbers are small.

Percentages

The vast majority of measure results in Quality Corp's reports are reported as the percentage of patients who are in need of a specific screening or care and received the necessary service. NCQA's HEDIS definitions for the eligible population (denominator) consist of patients who satisfied all specified criteria, including age, diagnosis, continuous health plan enrollment and event or anchor date requirements.

These percentages are calculated as follows:

$$\text{Percentage} = 100\text{x}\frac{\text{Number of eligible patients who met the measure specificaton}}{\text{Number of eligible patients}}$$

The percentage of potentially avoidable ED visits is calculated as:

$$\text{Percentage} = 100x\frac{\text{Number of potentially avoidable ED visits}}{\text{Number of total ED visits}}$$

The percentage of generic prescription fills are calculated as:

$$\text{Percentage} = 100x\frac{\text{Number of generic prescription fills}}{\text{Number of total prescription fills}}$$

Percentages are calculated for each medical group, clinic and provider. For a more detailed description of the measure definitions, see Table 12.

Rates

The measures of hospital admissions for ambulatory-sensitive conditions are new to this report and are the only measures reported as rates instead of percentages. These measures were developed by the Agency for Health Research and Quality (AHRQ) and are among the set of Prevention Quality Indicators (PQIs). These measures report the rate of hospital admissions per 100,000 patients that could have been avoided, at least in part, through better access to high-quality outpatient care. The measures are calculated as:

$$\text{Rate} = 100{,}000x\frac{\text{Number of ambulatory-sensitive hospital admissions}}{\text{Number of eligible patients}}$$

Note: In reports to medical group and providers, Quality Corp lists the rate per 100 patients to provide a scale more in line with the size of an average medical group's patient panel.

Benchmarks

Quality Corp provides comparative benchmarks to help recipients of the reports interpret the results, identify opportunities for improvement, and recognize areas of high performance where best practices may be spread. Quality Corp calculates two state benchmarks for Oregon and includes NCQA HEDIS national benchmarks.

State Benchmarks

The Oregon mean score included in this report is calculated as the mean clinic score among clinics with at least 25 patients in the measure denominator, regardless of clinic size (number of practicing primary care providers). This calculation includes many of the small/rural clinics added to Quality Corp's Provider Directory during the 2011 expansion, providing a more comprehensive picture of the care that is being provided by clinics across the state.

The Oregon mean score included in medical group and provider reports is calculated as the mean clinic score among clinics that meet Quality Corp's public reporting criteria – at least 25 patients in the measure denominator, four or more practicing primary care providers, and belonging to a group that has been included in at least one round of private reports. These inclusion criteria are more restrictive and result in fewer patients being included in the calculation. Because this score is the basis for which the public category cutoffs are determined, Quality Corp's Measurement and Reporting Committee advised that clinics included in public reports should only be compared to other publicly reported clinics.

In addition, Quality Corp calculates the Oregon Achievable Benchmark of Care (ABC) for each measure. This benchmark, developed at the University of Alabama at Birmingham, indicates the pared mean rate of best performing Oregon clinics providing care to at least 10 percent of the patient population. The achievable benchmark for each measure was calculated using data from this initiative and provides an objective method for comparing care against performance levels already achieved by "best-in-class" clinics within Oregon.

For detailed information, see the website: http://main.uab.edu/show.asp?durki=14503.

National Benchmarks

More than 90 percent of U.S. health plans use NCQA HEDIS measures to evaluate performance on important dimensions of health care and service, and more than 1,000 health plans nationwide voluntarily disclose their clinical quality and resource use data to NCQA. In turn, NCQA uses the data to create benchmarks and publish an annual report entitled *The State of Health Care Quality*.

Quality Corp's reports include the HEDIS national mean and 90th percentile (top 10 percent) benchmarks for each HEDIS measure. As Quality Corp's data set is based primarily on claims from commercial PPOs (eight of the 11 participating data suppliers), the PPO benchmarks were considered most appropriate for comparisons. The benchmark rates include only administrative claims data for PPOs.

Comparing Oregon clinics to a benchmark set by a data system that represents voluntarily participating health plans is not ideal; however, it is the only large database available at this time.

Public Reporting Category Cut-offs

Quality Corp's public consumer website, www.PartnerForQualityCare.org, includes performance results for Oregon clinics that meet the following criteria: four or more primary care providers, 25 or more patients in a given measure, and whose group has been included in at least one round of private reports. To facilitate consumer understanding, Quality Corp presents clinic results using category icons reading "Better," "Average" and "Below."

Clinics with rates that are above or below one standard deviation from the statewide mean clinic rate are reported as "Better" or "Below," respectively. As a result, approximately two-thirds of Oregon clinics are reported as "Average." In an effort to prevent clinics that do not meet the criteria for public reporting from

skewing the cut-offs, the statewide mean rates are calculated based only on the results of clinics meeting the public reporting criteria.

During initial rounds of public reporting, clinic results were presented only with these performance category icons (no raw rates) on the public website www.PartnerForQualityCare.org. In March 2012, following the second release of scores on the public website, the Robert Wood Johnson Foundation provided funding for usability testing to be conducted by the American Institutes for Research (AIR). Among the findings was that displaying raw clinic rates (in addition to the category icons) made consumers trust the data more, though consumers could not reliably interpret the rates. In response, Quality Corp's Measurement and Reporting Committee recommended that results still be displayed using category icons, but that raw rates be included in clinic pop-ups on the website beginning in July 2012. Committee members emphasized the need to include additional text to help users accurately interpret the information.

Trends

Quality Corp performed a trend analysis to identify significant changes in Oregon's mean clinic scores over time. The analysis was restricted to include only clinics with 25 patients in a given measure denominator during each round of reporting, and only those data suppliers that have contributed data since the initial reporting round for the measure. While both restrictions reduced the number of clinics eligible for inclusion in the analysis, they helped to control for changes in the population over time as clinics were added to the Provider Directory and data suppliers joined the initiative. Table 11 provides information on the look-back period and number of data suppliers used for the trend analysis of each measure.

Given the longitudinal nature of this analysis, a linear mixed effects model was used. This model features a combination of fixed effects to account for population characteristics assumed to be shared by all clinics, and random effects that are considered unique to individual clinics in the analysis. The model also accounts for the positive correlation that results from taking repeated measures on the same clinics. Quality Corp used the *lme* function in R to perform the analysis.

Reports

Quality Corp's medical director and director of measurement and reporting oversee the measurement and reporting process and quality improvement activities of Quality Corp's measurement initiative. While all committees include a representative from each stakeholder group, the initiative worked hard to involve providers in the decisions that most affected them. Four listening sessions with over 40 physicians and clinic managers were conducted initially to get feedback on the measurement process, report design and distribution.

Table 11: Look-back period and number of common data suppliers for trend analysis

	R1	R2	R3	R4	R5	# of Clinics Eligible for Analysis
8 Common Data Suppliers	Antidepressant Medication Mgmt, Acute	----------	----------	----------	---------- ▶	23
	Antidepressant Medication Mgmt, Continuous	----------	----------	----------	---------- ▶	23
	Cervical Cancer Screening	----------	----------	----------	---------- ▶	200
	Diabetes – Eye Exam	----------	----------	----------	---------- ▶	153
	Diabetes – Blood Sugar Screening	----------	----------	----------	---------- ▶	153
	Diabetes – Cholesterol Screening	----------	----------	----------	---------- ▶	153
	Diabetes – Kidney Disease Test	----------	----------	----------	---------- ▶	153
	Heart Disease Cholesterol Screening	----------	----------	----------	---------- ▶	34
	*	Breast Cancer Screening	----------	----------	---------- ▶	231
	*	Chlamydia Screening	----------	----------	---------- ▶	144
10 Common Data Suppliers	*	*	Appropriate Asthma Medications - Total	----------	---------- ▶	46
			Appropriate Antibiotics for Sore Throats	----------	---------- ▶	67
			Appropriate Low Back Pain Imaging	----------	---------- ▶	131
			Well-Child Visits 0-15 Mths – 6+	----------	---------- ▶	85
			Well-Child Visits 3-6 Yrs	----------	---------- ▶	165

*Quality Corp included this measure in previous rounds of reporting, but a change in the measure definition prevented comparisons to prior results.

Provider Reports for Quality Improvement

Quality Corp creates and distributes quality and resource use reports for medical groups and providers twice per year. These are distributed as mailed hard copy reports as well as online reports accessible through a secure provider portal, allowing users to view data at the medical group, clinic, provider and patient levels. In response to feedback from practicing primary care providers, mailed reports and communications from Quality Corp are sent to medical group administrators for initial review.

Administrators are often medical group managers, quality improvement directors and/or medical directors. After reviewing the reports, which contain results at the medical group and provider levels, administrators are then asked to distribute the provider-level reports to providers within the group.

The physicians, nurses and medical group administrators who helped design this effort emphasized that providing clinic, provider and patient-level detail to medical groups is essential if claims information is to be validated, trusted and useful. In response, Quality Corp and Milliman (Quality Corp's data services vendor) created a secure online portal to deliver this information to medical groups and providers. In an effort to maintain the highest security and confidentiality, medical group administrators must undergo an identity verification process before obtaining a username and password to access the system. This secure portal and delivery of patient-level data derived from claims for quality improvement and better patient treatment is one of the first in the nation. Creating provider reports and making patient-level data available is considered an important component of Quality Corp's effort to assist medical groups with tools for effective quality improvement. Reporting of this information complies with Health Insurance Portability and Accountability Act (HIPAA) regulations. Quality Corp's secure online portal received over 140,000 page hits from medical group users and providers during the May 2012 medical group review period.

Quality Corp is currently on a spring/fall reporting schedule. The spring reports are distributed privately to medical groups as well as publicly (at the clinic-level only) on Quality Corp's consumer website, www.PartnerForQualityCare.org. The fall reports have been added to Quality Corp's reporting schedule in response to multiple requests from groups saying that more frequent reports are helpful for quality improvement purposes. The fall reports are only distributed privately to medical groups.

Criteria for Clinic Inclusion in Public Reports

Criteria for inclusion on the public website www.PartnerForQualityCare.com are as follows:

- Four or more primary care providers in the clinic
- Minimum 25 patients that meet the specifications for the measure
- Medical group has been included in one round of private reports

Medical groups that are new to receiving Quality Corp's reports have their results withheld from public reporting for one round, to give them time to review the format of the reports and learn more about the initiative and its policies around measurement.

Results for individual providers are not publicly reported at this time, but are provided in hard copy and online for internal clinic/provider use and quality improvement efforts. Clinics with fewer than four providers that wish to have their data included in public reports may opt-in to the initiative. Health plans receive unblinded information on providers and clinics for their insured members.

Annotation for Federally-Qualified Health Centers (FQHCs)

Prior to the public release of data in January 2010, Quality Corp heard from a number of safety net clinics facing unique data quality issues. These issues fell into a few distinct areas: 1) patient factors; 2) claims billing practices; 3) clinic and provider differences; and 4) methodological issues. Some factors identified by safety net clinics are inherent in the measurement process and may affect results among all Oregon clinics.

These safety net clinics were concerned about having their quality scores compared to clinics seeing primarily commercial patients on the public website; however, there was no common solution identified. As a result, exclusion from public reporting was allowed on a case-by-case basis. Before the next round of public reporting that occurred in February 2011, Quality Corp's Program Committee and Measurement and Reporting Committee met on this issue. There was unanimous agreement within both committees on the initiative's commitment to transparency and the use of public reporting to improve the quality of care. Committee members reasoned that since all patients are deserving of high-quality health care, it seemed to follow that all clinics should be publicly reported. Furthermore, it was recognized that safety net clinics and clinics serving a high proportion of Medicaid patients had already proven themselves capable of providing high quality care.

Upon the Measurement and Reporting Committee's recommendation, a special Safety Net Subcommittee meeting was assembled in January 2011 to investigate coding issues particular to FQHCs and their possible impact on measure results. Present were members from Quality Corp's staff, Oregon Primary Care Association (OPCA), Division of Medical Assistance Programs (DMAP), CareOregon, OCHIN, commercial health plans, clinic administrators from several safety net clinics and consumers. It was recommended to include a special annotation for FQHCs for all quality measures reported on Quality Corp's consumer website, www.PartnerForQualityCare.org, with a footnote reading:

> *Federally Qualified Health Center (FQHC): *Partner for Quality Care* scores are based on claims data. FQHCs use a claims process that may differ from other health plans. *Partner for Quality Care* is working with Oregon FQHCs to address any discrepancies in the next 12 months.

During this initial meeting, safety net providers expressed concern that because some of their patients receive preventive services through referred providers rather than directly at the clinic, they may face a disadvantage for quality measures if those providers do not bill Medicaid/Oregon Health Plan for those services. Quality Corp's subsequent investigations revealed that the common practice for these organizations is to bill for qualified services for Medicaid enrollees.

Quality Corp reconvened its Safety Net Subcommittee in June 2012. The Subcommittee's recommendation, approved by the Measurement and Reporting Committee in the same month, was to retain the policy of annotating FQHCs during the July 2012 consumer website refresh. Quality Corp is continuing to work collaboratively with several safety net clinics to investigate remaining possible billing

system issues that may prevent services rendered from appearing in Quality Corp's claims data set. This includes a formal audit of one safety net clinic during July 2012. The audit will consist of a chart review to compare the clinic's medical records with Quality Corp's patient-level results for a subset of measures. Quality Corp is resourcing a private contractor to conduct the audit onsite at the clinic. Quality Corp and the audit clinic have collaborated to outline the scope and process of the audit, and clinic staff are committed to contributing to all aspects of the audit.

Quality Corp will reconvene the Safety Net Subcommittee when there is more information to share. Current processes for data reconsideration or exclusion from public reporting remain in place for all clinics that can prove unique problems/hardships.

Administrative Claims Data

The clinic results included in *Information for a Healthy Oregon* are based on administrative and pharmacy claims supplied by 11 data suppliers. The aggregated data include information for 295.1 million tests, diagnoses and services provided by physicians and other practitioners and 128.7 million prescription fills through June 30, 2011. The data represent care provided to nearly two million commercial, managed care and fee-for-service Medicaid patients enrolled as of June 30, 2011. See Tables 1 and 2 for a detailed summary of Quality Corp's claims database.

Validation

Claims data were submitted by health plans to Milliman, Quality Corp's data services vendor. Milliman worked with each data supplier to validate the submitted data. There were two levels of validation – one that ensured the correct transmission of the data and another that ensured measure results were consistent between Milliman and the data supplier. Once validated, the data were aggregated across data suppliers prior to measure calculation.

Medical Group Pre-Testing

Prior to adding new measures to reports, Quality Corp recruits volunteer medical groups to compare preliminary results on Quality Corp's secure portal to patient records. This validation ensures that measures are running as expected and are producing accurate and useful results. Quality Corp provides the volunteer medical groups with detailed instructions to ensure that a random selection of patient records are considered and all pertinent information is reviewed. Medical groups submit patient-level feedback through the secure portal, after which Quality Corp and Milliman review the results and make any needed adjustments to the measures or methods.

In fall 2010, six medical groups volunteered to validate four new measures on ambulatory resource use and pediatric care:

- Appropriate Low Back Pain Imaging
- Appropriate Use of Antibiotics for Children with Sore Throats
- Well-Child Visits in the First 15 Months of Life
- Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life

In spring 2012, four medical groups volunteered to validate two new measures on hospital resource use:

- Potentially Avoidable ED Visits
- Hospital Admissions for Ambulatory-Sensitive Conditions

Quality Corp's Measurement and Reporting Committee performs a final review of the findings from the medical group validations and determines whether measures should be added to Quality Corp's reports. All of the measures listed above were approved for inclusion in the reports, though medical group feedback on the hospital resource use measures suggested it may be appropriate to explore alternative methods for attributing patients to primary care providers. Methods that may be considered include shortening the attribution period to fewer than 24 months or preventing attribution when ED/hospital visits occur before the attributed primary care provider was established as the patient's PCP. The Measurement and Reporting Committee decided that since the measure results themselves appeared to be accurate and these measures are not publicly reported, the results should be distributed in private reports to medical groups and providers to solicit additional feedback. The Measurement and Reporting Committee will evaluate the current attribution methodology after additional feedback has been received.

Advantages and Limitations of Administrative Claims Data

Claims data reflect information submitted by providers to payers as part of the billing process. While not all medical care shows up in billing data, it does include useful information about diagnoses and services provided. Using claims data, for example, one can measure care processes such as "What percentage of patients with diabetes were given an HbA1c test at least once during the measurement year?" However, one cannot measure actual control/outcomes such as "What is a patient's HbA1c level?"

While administrative claims data may have limitations for quality improvement, they provide basic information for a very large segment of the Oregon health care delivery network. For accurate measurement and comparison across the state, large data sets are essential. The advantage of Quality Corp's data set is that the claims are aggregated across 11 of Oregon's largest health plans and Medicaid fee-for-service, assembling the most comprehensive and useful set of claims to date. The data include information for patients that receive care across settings (outpatient, inpatient, ED, etc.) and throughout the regions of Oregon.

The limitations of claims data include timeliness and completeness. For example, data in this report do not include a clinic's entire patient population, such as uninsured patients, patients who pay for their own health care services, Medicare fee-for-service patients, or patients served by a plan or Medicaid

provider that does not participate in the initiative. Quality Corp is actively working with additional data suppliers to fill in some of these gaps for future reports.

Claims may also be missing information that would exclude patients from the denominator for clinical reasons (e.g. hysterectomies performed before the start of the claims capture period, which should exclude women from the cervical cancer screening measure) and billing workarounds on the part of clinics that prevent accurate data capture. Billing workarounds sometimes include billing from a provider who was different than the person who actually provided care. With help from medical groups, the data will become more timely, accurate and useful for future reports. Despite these limitations, the initiative provides the most comprehensive quality reports available in Oregon because data suppliers have come together to pool data for quality improvement.

Currently, claims data are the only type of high-volume data readily available in electronic format. Claims data are also relatively inexpensive for assessing care quality in comparison to other data sources such as assembling structured data from electronic health record (EHR) data or chart abstraction. Obtaining EHR data from medical groups for consolidated quality reports is an emerging technology. The Quality Corp Board of Directors has approved a pilot project for creating an EHR database from multiple platforms. Quality Corp plans to build on its experience with claims data and strong relationships with the provider community to develop a pilot project to first collect EHR data using a standardized process and subsequently merge the clinical information with Quality Corp's claims database. A draft work plan has been developed for the first phase of piloting collection of EHR information for use in reporting and integration with the Quality Corp claims database. In June 2012 Quality Corp staff had site visits with three pilot clinics and met with stakeholders to launch the project. An advisory committee will be convened to provide expertise and guidance during pilot development.

Table 12: Quality Measure Descriptions and Definitions

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Asthma: Use of appropriate medications for people with persistent asthma	Dispensed at least one prescription for a preferred therapy during the measurement year*. Preferred asthma medications include anti-asthmatic combinations, antibody inhibitor, inhaled steroid combinations, inhaled corticosteroids, leukotriene modifiers, mast cell stabilizers, and methylxanthines.	**Asthma is defined by:** 1st measure (Total): Patients 5–50 years of age during the measurement year* and the year prior who were identified as having persistent asthma because of at least four asthma medication dispensing events, at least one ED visit with asthma as the primary diagnosis, at least one acute patient discharge with asthma as the principal diagnosis, or at least four outpatient asthma visits. Exclude from the eligible population all members diagnosed with emphysema or COPD. 2nd measure (Adult): Patients 12–50 years of age 3rd measure (Child): Patients 5–11 years of age
Coronary Artery Disease: Cholesterol management (LDL test) for patients with cardiovascular conditions	Had at least one LDL-C test during the measurement year*.	**Coronary artery disease is defined by:** 1. Patients 18-75 years discharged alive for AMI, CABG, or PTCA on or between July 1, 2009 – May 1, 2010; or 2. Patients 18-75 years who had a diagnosis of any ischemic vascular disease (IVD) July 1, 2009 – June 30, 2011. **Note**: AMI and CABG are from inpatient claims only.
Diabetes: HbA1C testing	Had at least one HbA1c test performed during the measurement year*.	**Diabetes is defined by:** 1. Patients 18-75 years of age who were dispensed insulin or a hypoglycemic/anti-hyperglycemic on an ambulatory basis; 2. Patients who had two face-to-face encounters with different dates of service in an outpatient setting or non-acute inpatient setting with a diagnosis of diabetes; or, 3. Patients with one face-to-face encounter in an acute inpatient or emergency room setting with a diagnosis of diabetes. **Exclusions**: Patients with gestational diabetes, steroid-induced diabetes, or polycystic ovaries.
Diabetes: LDL-C test	Had at least one LDL-C screening test done during the measurement year*.	
Diabetes: Eye exam (retinal) performed	Had an eye screening for diabetic retinal disease. This includes those diabetics who had a retinal or dilated eye exam by an eye care professional (optometrist or ophthalmologist) during the measurement year*.	
Diabetes: Evidence of nephropathy assessment, treatment, or prevention	Screening for nephropathy or evidence of nephropathy during the measurement year*. Evidence of nephropathy includes a nephrologist visit, a urine macroalbumin test as documented by claims, and/or treatment with ACE inhibitor/ARB therapy.	

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Depression: Antidepressant medication management: acute phase	Patients who remained on an antidepressant medication for at least 84 days (12 weeks) as determined by prescription fills.	**Depression is defined by:** Patients aged 18 and older diagnosed with a new episode of major depression during the measurement year* and prescribed antidepressant medication. **Exclusions:** Patients who had an acute inpatient stay with a principal diagnosis of mental health or substance abuse during the 245 days after the episode start date. Patients with brief depressive reaction are excluded since the diagnosis includes grief reaction.
Depression: Antidepressant medication management: continuous phase	Patients who remained on an antidepressant medication for at least 180 days (6 months) as determined by prescription fills.	
Breast Cancer Screening	Women who had a mammogram during the measurement year* or the year prior. *Note: The U.S. Preventive Services Task Force released updated guidelines in November 2009 that do not recommend biennial screening mammography for women under age 50 years. Quality Corp recognizes that the HEDIS Breast Cancer Screening measure for the current measurement year (7/1/2010 – 6/30/2011) has not been updated to reflect the new recommendations. Quality Corp's Measurement and Reporting Committee will evaluate appropriate options for future rounds of reporting.*	**Women eligible for breast cancer screening include:** Women 40-69 years of age. **Exclusions:** Women who had a bilateral mastectomy or 2 separate mastectomies billed in 2005 – June 2011.
Cervical Cancer Screening	Women who had a Pap test during the measurement year* or the two years prior. *Note: The U.S. Preventive Services Task Force released updated guidelines in March 2012 that allow for a five year interval between cervical cancer screenings, when administered in combination with HPV testing, for women aged 30-65 years. The current measurement year (7/1/2010 – 6/30/2011) precedes the new guidelines. Quality Corp's Measurement and Reporting Committee will evaluate appropriate options for future rounds of reporting.*	**Women eligible for a Pap test include:** Women 21-64 years of age. **Exclusions**: Women who had a hysterectomy billed in 2005 – June 2011.
Chlamydia Screening	Women who had a Chlamydia test during the measurement year*.	**Women eligible for a Chlamydia screen include:** Sexually active women 16-24 years of age. Sexually active women are identified by either having filled a prescription for contraceptives during the measurement year* or had at least 1 claim with a code to identify sexually active women. **Exclusions:** Women who had a pregnancy test during the measurement year followed within 7 days by either a prescription for Accutane or an x-ray are excluded.

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Well-Child Visits in the First 15 Months of Life	1st measure: Children who had 5 or more well-child visits with a PCP during their first 15 months of life. Note: The PCP does not have to be the practitioner assigned to the child. 2nd measure: Children who had 6 or more well-child visits with a PCP during their first 15 months of life. *(Note: This is the standard HEDIS measure.)* Note: The PCP does not have to be the practitioner assigned to the child.	**Eligible children are defined by:** Children aged 15 months anytime during the measurement year*.
Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life	Children who had at least one well-child visit with a PCP during the measurement year*. Note: The PCP does not have to be the practitioner assigned to the child.	**Eligible children are defined by:** Children aged 3-6 years as of March 31 of the measurement year*.
Appropriate Testing for Children with Pharyngitis	Children who had a group A streptococcus test in the seven-day period starting three days prior to the episode date to three days after the episode date.	**Eligible children are defined by:** Children aged 2 years as of July 1, 2009 to 18 years as of June 30, 2011 who had an outpatient or ED visit with only a diagnosis of pharyngitis and a dispensed antibiotic for that episode of care. **Exclusions:** Children who received more than one diagnosis on the episode date. Children who were dispensed antibiotics more than three days after the episode date. Children who were dispensed a new or refill antibiotic prescription within the 30 days prior to the episode date, or still had an active antibiotics prescription from more than 30 days prior.
Use of Imaging Studies for Low Back Pain	Patients on whom an imaging study was not conducted on or within the 28 days following the episode date.	**Low back pain is defined by:** Patients aged 18-50 during the measurement year* who had an outpatient or ED encounter with a primary diagnosis of low back pain. **Exclusions:** Patients with a low back pain diagnosis during the 180 days (6 months) prior to the episode date. Patients for whom an imaging study in the presence of low back pain is clinically indicated: cancer anytime in the patient's medical history; recent trauma, intravenous drug use, or neurological impairment within 12 months of the episode date.

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Generic Prescription Fills: Statins	Number of prescription fills for statins identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of statins, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Quality Corp is investigating the relevance of the four generic prescription fill measures for pediatric care and the availability of suitable generic options for children among these drug classes. Quality Corp's Measurement and Reporting Committee is also considering whether an alternative drug class(es) would be more relevant for measuring generic prescription fills in the pediatric population.*
Generic Prescription Fills: SSRIs and other Second Generation Antidepressants	Number of prescription fills for second generation antidepressant prescriptions identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of second or third generation antidepressants, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. Includes SSRIs, SNRIs and DNRIs. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*
Generic Prescription Fills: PPIs	Number of prescription fills for PPI prescriptions identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of proton pump inhibitors, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*
Generic Prescription Fills: NSAIDs	Number of prescription fills for NSAID prescribing events identified as generic.	**A prescription fill is defined by:** 1st measure (Adult): A prescription fill for at least a 30-day supply of non-steroidal anti-inflammatory drugs, both brand-name and generic, during the 12-month measurement year* by a patient aged 18 years or older. 2nd measure (Child): Patients 0 – 17 years of age *Note: Please see note in Statins section above.*

Measure Name	Numerator: Definition for Compliance of Measure	Denominator: Definition of Condition and Exclusions
Potentially Avoidable ED Visits	The total number of emergency department visits with a primary diagnosis code that appears on California MediCal's list of Avoidable ICD-9 Diagnosis Codes for ED Care (see link below), among the eligible population. Link to MediCal Avoidable Visits ICD-9 diagnosis codes – see Appendix A: http://www.dhcs.ca.gov/dataandstats/reports/Documents/MMCD_Qual_Rpts/EQRO_QIPs/CA2010-11_QIP_Coll_ER_Remeasure_Report_F1.pdf	1st measure (Adult): The total number of emergency department visits among the patients aged 18 years and older. 2nd measure (Child): The total number of emergency department visits among patients aged 1-17 years. **Exclusions (Adult and Child):** Visits that result in an inpatient stay. Patients with mental health and chemical dependency services. Infants less than 12 months of age on the date of the emergency department visit
Hospital Admissions for Ambulatory-Sensitive Conditions	Overall Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the conditions listed in the Acute/Chronic Composite measures (below). Acute Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the following: • PQI #10 – Dehydration • PQI #11 – Bacterial Pneumonia • PQI #12 – Urinary Tract Infection Chronic Composite: All eligible discharges with ICD-9-CM principal diagnosis code for any of the following: • PQI #1 – Diabetes Short-Term Complications • PQI #3 – Diabetes Long-Term Complications Admission Rate • PQI #5 – Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults • PQI #7 – Hypertension Admission Rate • PQI #8 – Congestive Heart Failure (CHF) • PQI #13 – Angina without Procedure • PQI #14 – Uncontrolled Diabetes • PQI #15 – Asthma in Younger Adults • PQI #16 – Rate of Lower-Extremity Amputation Among Patients with Diabetes	The number of patients aged 18 years and older enrolled for the entire last month of the measurement year (June 2011). **Exclusions:** Maternal/neonatal discharges. Transfers from another institution. *Notes: Quality Corp reports results as hospital admissions per 100 patients to facilitate interpretation by medical groups and providers. The Agency for Healthcare Research and Quality (ARHQ) scales results per 100,000 patients.*

* Results are based on administrative claims data with dates of service between July 1, 2008 – June 30, 2011, and the measurement year July 1, 2010 – June 30, 2011.

Separation Page

Screenshots from existing QEs:

Health Improvement Collaborative of Greater Cincinnati

Kansas City Quality Improvement Consortium

Oregon Health Care Quality Corporation

Primary Care Practice Profile

Bethesda Group Practice Arrow Springs TriHealth Physician Partner

100 Arrow Springs Blvd
Suite 200
Lebanon, OH 45036
(513) 282-7911
map

Primary Care Physicians Website

Primary care physicians at this practice:
Jeffrey Armitage, Steven Crendel, Bill Karas, Michael Scharf, Natalie Turchin

Office hours: Weekdays

Accepting new patients: YES

Insurance accepted: Aetna, Anthem, HealthSpan, Humana, Medicaid, Medicare, UnitedHealthcare

Uses electronic medical records: YES

Languages spoken: English, Other

Recognition for quality of care: BRIDGES TO EXCELLENCE, NATIONAL COMMITTEE FOR QUALITY ASSURANCE

Patient Centered Medical Home: YES

Tip: Print this page and bring it to your next doctor's visit.

Printer-friendly page

compare

Compare this practice with other primary care practices in the Greater Cincinnati area.
The higher the number, the more people are getting the care they need.

| = Greater Cincinnati regional average

Diabetes	46%	Show scores for each goal
Cardiovascular Health	49%	Show scores for each goal
Colon Cancer Screening	73%	

See scores for previous years

Kansas City Quality Improvement Consortium

Find Quality Care

About the Data >

Provider Profile For:

BRIARCLIFF MEDICAL ASSOCIATES

LOCATIONS

5400 N Oak Trwy Ste 200
Kansas City MO, 64118

ASSOCIATED DOCTORS

BYRON D LAW
CHARLOTTE X ZHANG
DANN J FREDRICKSON
JAMES V MATURO
JAMES K TARWATER
JOHN O STANLEY
MARY I BUSS
MICHAEL E SHINN

Measurement Period (choose one): 2011 | 2010 | 2009 | 2008

ALL SCORES FOR THIS PROVIDER

Measure (Click to view full listing)	# of Patients	Rate (%)	Greater Kansas City Area Average (%)	National Average (%)
Diabetes: Blood Sugar Test	266	84.6%	89.1%	87%
Diabetes: Good Blood Sugar Control	139	54%	54.7%	N/A
Diabetes: Controlled blood sugar test	192	71.4%	70.7%	N/A
Diabetes: Poor blood sugar control	145	16.5%	14.2%	N/A
Diabetes: Cholesterol test	266	80.5%	83.2%	84%
Diabetes: Cholesterol control	193	60.6%	57.8%	N/A
Diabetes: Eye Exams	266	43.6%	46.8%	57%
Diabetes: Kidney Problems	266	77.8%	83.8%	79%

What do these mean? Better Below Average

« Change Search

Tips for Diabetes Care »

25 Results for:

Diabetes Care *within 20 miles of* 97002

To help prevent serious health problems associated with diabetes, people with diabetes need regular medical care that includes certain types of tests and exams. This includes eye exams and blood sugar, cholesterol, and kidney disease tests. The quality scores below show how each doctor's office rated at providing this recommended care.

Sort: ○ By Score ◉ Alphabetically

Doctors' Offices	Dilated eye exam Checks for blood vessel damage in the eyes	Blood sugar test Measures level of blood sugar during past 3 months	Cholesterol test Checks the level of "bad" cholesterol	Kidney disease test Samples urine for signs of kidney disease
Beavercreek Center *	Below	Average	Average	Average
Cleary Medical Associates	Better	Average	Average	Average
Kaiser Beaverton Medical Office	Better	Average	Better	Better
Kaiser Mount Scott Medical Office	Better	Better	Better	Better
Kaiser Murrayhill Medical Office	Better	Average	Better	Better

Non – Qualified Entities Information

Non-QE using a Proprietary System from Optum

Affiliation Group Profile
Presented by WHIO

Specialty Patterns of Care

For the 12 Months Ending 9/30/2010

Affiliation Group

Affiliation ID:

Affiliation Description:

Number of Providers:	67
Number of Episodes:	24,137
Case Mix Episodes:	1.05

Peer Group

Peer Group Number of Episodes:	448,360
Peer Group Name:	WHIO PCP (Internal Medicine)

Key Statistics

Overall Quality Index:	1.06
Overall Cost Index, Episode:	0.64

Confidence Intervals for the Index

Overall Quality Index:	1.05 to 1.06 **
Overall Cost Index, Episode:	0.62 to 0.65 **

Statistical significance of difference between index and peer group average: * p<0.10; ** p < 0.05

Episode Case Mix Summary

Top 10 ETGs, by Total Cost (Completed Episodes of Care)

ETG Family Description	Episodes	Episodes: Actual Cost / Episode	Episodes: Peers Cost / Episode	Encounters (Per 1000 Episodes): Actual Encounters / 1000 Episodes	Encounters (Per 1000 Episodes): Peers Encounters / 1000 Episodes
Ischemic heart disease	887	$4,526.30	$3,125.98	18,471	18,138
Hypertension	4,140	$801.74	$804.30	10,235	13,471
Diabetes	1,548	$1,459.34	$1,791.55	15,433	20,186
Hyperlipidemia, other	4,517	$358.13	$406.50	4,713	6,165
Chronic renal failure	477	$2,853.55	$1,770.40	8,282	9,045
Congestive heart failure	200	$5,574.21	$4,933.43	24,087	22,087
Chronic obstructive pulmonary disease	267	$3,737.16	$2,956.87	15,800	16,190
Obesity	1,952	$488.25	$432.29	4,317	4,239
Bacterial lung infections	170	$3,832.88	$3,090.69	8,606	9,384
Asthma	462	$1,182.61	$1,282.49	8,857	11,182
All Others	9,518	$761.31	$664.67	5,928	6,658
All Episodes	**24,137**	**$997.69**	**$895.71**	**7,761**	**9,214**

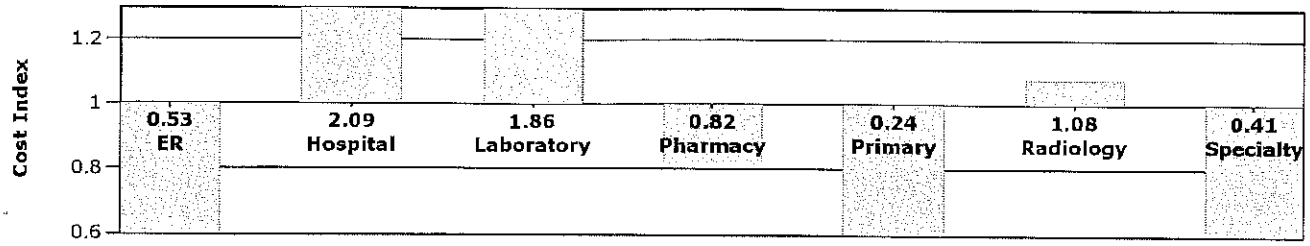
Quality Measures

As of the End of the Report Period
(Members Must be Continuously Enrolled with Plan a Minimum of 12 Months)

	Number of Quality Opportunities		Rates		Index
	With Compliance	Total	Actual Rate	Peer Rate	Quality Index
Cardiology					
Beta-Blocker Tx (NS)					
Pt(s) hospitalized with an acute myocardial infarction (AMI) persistently taking a beta-blocker for six months after discharge.	2	5	0.40	0.50	0.80
CAD					
Pt(s) on a statin.	373	451	0.83	0.81	1.02
CAD					
Pt(s) w/ a myocardial infarction in the past who are on a beta-blocker.	112	134	0.84	0.79	1.06
CHF					
Pt(s) on a beta-blocker.	66	75	0.88	0.79	1.11
CHF					
Pt(s) on an ACE-inhibitor or acceptable alternative.	60	69	0.87	0.74	1.17
CHF (NS)					
Pt(s) w/ CHF and atrial fib on warfarin.	37	45	0.82	0.74	1.12
Endocrinology					
Diabetes					
Pt(s) that had at least 2 HbA1c tests in last 12 reported mos.	876	998	0.88	0.77	1.14
Diabetes (NS)					
Pt(s) 18 - 75 yrs of age that had an annual screening test for diabetic retinopathy.	170	993	0.17	0.45	0.38
Diabetes (NS)					
Pt(s) 18 - 75 yrs of age that had annual screening for nephropathy or evidence of nephropathy.	899	993	0.91	0.83	1.09
Diabetes (NS)					
Pt(s) 18 - 75 yrs of age with a LDL cholesterol in last 12 mos.	932	993	0.94	0.84	1.12
Orthopedics and Rheumatology					
LBP Imaging (NS)					
Pt(s) w/ uncomplicated low back pain that did not have imaging studies.	46	70	0.66	0.75	0.88
Otolaryngology					
Pharyngitis (NS)					
Pt(s) treated w/ an abx for pharyngitis that had a Group A streptococcus test.	15	16	0.94	0.77	1.22
Preventive and Administrative					
Breast CA Scrn (NS)					
Pt(s) 42 - 69 yrs of age that had a screening mammogram in last 24 rpt mos.	559	627	0.89	0.80	1.11
Chlamydia Scrn (NS)					
Pt(s) 16 - 24 yrs of age that had a chlamydia screening test in last 12 rpt mos.	62	121	0.51	0.51	1.01
Psychiatry					
Depression Med Mgmt (NS)					
Pt(s) w/ a new episode of depression that remained on an antidepressant med during the 12 week acute tx phase.	38	56	0.68	0.65	1.04

Depression Med Mgmt (NS)					
Pt(s) w/ a new episode of depression that remained on an antidepressant med during the 6 month acute tx phase.	24	56	0.43	0.47	0.90
Mental Illness - FU (NS)					
Pt(s) hosp for mental illness that had an outpt follow-up encounter w/ a mental health practitioner w/in 30 dys after discharge.	0	3	0.00	0.55	0.00
Pulmonology					
Asthma (NS)					
Pt(s) w/ presumed persistent asthma using an inhaled corticosteroid or acceptable alternative.	73	81	0.90	0.89	1.02
Bronchitis, Acute (NS)					
Pt(s) with a diagnosis of acute bronchitis that did not have a prescription for an antibiotic on or three days after the initiating visit.	17	85	0.20	0.21	0.97
COPD Exacerbation (NS)					
Pt(s) 40 years of age and older with COPD exacerbation that received a bronchodilator within 30 days of the hospital or ED discharge.	52	65	0.80	0.80	1.00
COPD Exacerbation (NS)					
Pt(s) 40 years of age and older with COPD exacerbation that received a systemic corticosteroid within 14 days of the hospital or ED discharge.	44	65	0.68	0.62	1.08
URI (NS)					
Pt(s) w/ a dx of URI that did not have a presc for an abx on or 3 dys after the initiating visit.	36	38	0.95	0.89	1.06
Total	**4,493**	**6,039**	**0.74**	**0.73**	**1.02**

Cost Index Summary, by Service Category



Cost and Utilization Summary Measures

Profiled Costs

	Actual Encounters	Peers Encounters	Actual Cost / Episode	Peers Cost / Episode	Cost / Episode Index	Actual Total Cost
ER	837	1,228	$10.22	$19.19	0.53	$246,698
Hospital Services	50,849	14,809	$556.95	$266.33	2.09	$13,443,134
Laboratory	21,148	13,565	$86.37	$46.44	1.86	$2,084,677
Pharmacy	89,990	115,337	$209.06	$255.03	0.82	$5,046,032
Primary Care Core	8,976	36,727	$29.47	$123.37	0.24	$711,204
Radiology	4,045	2,974	$46.98	$43.44	1.08	$1,133,922
Specialty Care	11,475	37,758	$58.65	$141.90	0.41	$1,415,546
Total	187,320	222,398	$997.69	$895.71	1.11	$24,081,213

Overall Cost Index: 0.64

Utilization Rates Per 1,000 Episodes

	Actual	Peers	Index
Specialist Visit Rate	292	1,155	0.25
Other Specialty Care Rate	104	309	0.34
Radiology Procedure Rate	187	183	1.02
MRI Procedure Rate	5	7	0.75
Laboratory Procedure Rate	978	935	1.05
Overall Prescribing Rate	3,728	4,778	0.78
Generic Prescribing %	94%	94%	1.00
ER Visit Rate	21	43	0.48
Admits per 1000 Episodes	151	38	3.99
Days per 1000 Episodes	261	155	1.68
Average Length of Stay	1.73	4.10	0.42

Episode Detail and Analysis

Hypo-functioning thyroid gland

Total Specialty Episode Costs: $513,216

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	1,147	$447.38	$23.76	$8.23	$164.64	$9.63	$91.02	$148.71	$1.39
Peers		$492.08	$121.18	$41.42	$100.69	$14.38	$36.70	$174.50	$3.20
Index			0.20	0.20	1.64	0.67	2.48	0.85	0.43
Encounters per 1000 Episodes									
Actual			259	178	1,232	23	1,895	5,167	7
Peers			1,243	1,190	1,158	32	532	6,884	10
Index			0.21	0.15	1.06	0.73	3.56	0.75	0.63

Diabetes

Total Specialty Episode Costs: $2,258,569

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	1,548	$1,459.34	$52.46	$58.10	$193.32	$21.89	$410.28	$710.29	$13.00
Peers		$1,791.55	$241.15	$263.30	$71.63	$33.95	$161.72	$982.33	$37.49
Index			0.22	0.22	2.70	0.64	2.54	0.72	0.35
Encounters per 1000 Episodes									
Actual			685	614	1,435	49	3,674	8,936	40
Peers			2,915	3,555	924	51	847	11,794	100
Index			0.23	0.17	1.55	0.96	4.34	0.76	0.40

Hyperlipidemia, other

Total Specialty Episode Costs: $1,617,550

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	4,517	$358.13	$15.60	$1.70	$116.45	$4.31	$31.90	$187.73	$0.44
Peers		$406.50	$64.18	$8.67	$46.00	$5.85	$9.25	$271.85	$0.70
Index			0.24	0.20	2.53	0.74	3.45	0.69	0.63
Encounters per 1000 Episodes									
Actual			194	90	785	4	1,048	2,590	2
Peers			745	582	523	6	222	4,084	2
Index			0.26	0.15	1.50	0.67	4.72	0.63	0.82

Hypertension

Total Specialty Episode Costs: $3,319,269

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	4,140	$801.74	$23.37	$26.12	$74.82	$46.03	$386.47	$238.61	$6.33
Peers		$804.30	$174.50	$112.68	$46.56	$54.44	$144.02	$254.51	$17.59
Index			0.13	0.23	1.61	0.85	2.68	0.94	0.36
Encounters per 1000 Episodes									
Actual			315	255	710	122	2,031	6,779	24
Peers			2,011	1,603	442	113	720	8,535	46

Index			0.16	0.16	1.61	1.08	2.82	0.79	0.52

Chronic sinusitis

Total Specialty Episode Costs: $137,684

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	427	$322.76	$41.79	$26.54	$9.11	$51.24	$88.03	$98.37	$7.68
Peers		$419.39	$124.58	$65.99	$5.71	$48.29	$17.36	$146.57	$10.90
Index			0.34	0.40	1.59	1.06	5.07	0.67	0.71
Encounters per 1000 Episodes									
Actual			473	221	81	161	1,294	2,858	23
Peers			1,439	708	70	113	226	3,498	39
Index			0.33	0.31	1.16	1.42	5.73	0.82	0.60

Acute bronchitis

Total Specialty Episode Costs: $85,435

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	458	$186.54	$29.56	$12.35	$6.26	$37.34	$59.03	$37.99	$4.02
Peers		$200.76	$103.68	$18.96	$2.30	$7.80	$10.46	$47.23	$10.32
Index			0.29	0.65	2.72	4.78	5.64	0.80	0.39
Encounters per 1000 Episodes									
Actual			389	178	71	360	1,020	1,745	24
Peers			1,279	298	37	66	152	1,817	38
Index			0.30	0.60	1.92	5.47	6.72	0.96	0.63

Asthma

Total Specialty Episode Costs: $545,973

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	462	$1,182.61	$54.26	$106.66	$10.22	$60.81	$403.11	$528.75	$18.81
Peers		$1,282.49	$154.69	$207.12	$14.38	$29.42	$222.85	$604.20	$49.85
Index			0.35	0.51	0.71	2.07	1.81	0.88	0.38
Encounters per 1000 Episodes									
Actual			616	823	95	307	2,038	4,915	62
Peers			1,857	2,024	101	141	643	6,281	134
Index			0.33	0.41	0.94	2.17	3.17	0.78	0.46

Joint degeneration, localized

Total Specialty Episode Costs: $507,136

Cost per Episode	# of Episodes	Total	Primary Care Core	Specialty Care	Laboratory	Radiology	Hospital	Pharmacy	ER
Actual	522	$971.06	$23.82	$49.49	$16.98	$236.72	$545.04	$95.69	$3.31
Peers		$936.48	$135.65	$201.52	$34.22	$206.72	$184.01	$163.17	$11.20
Index			0.18	0.25	0.50	1.15	2.96	0.59	0.30
Encounters per 1000 Episodes									
Actual			257	569	181	782	1,862	2,162	17
Peers			1,471	2,283	181	690	566	3,755	35
Index			0.17	0.25	1.00	1.13	3.29	0.58	0.49

Report Introduction and Interpretation

Patterns of Care

This section gives an overview of the performance of the report entity for the 12 month period ending on the date in the banner of the section. Note that claims paid in the 3 months after that date for dates of service in those 12 months prior to the date are included in the data. All comparisons in the report are with the report entity peer group, based on a peer definition centered on a specialty. The peer group defines how and what episodes and quality measures are attributed, as well as how those episodes are attributed. For example, a specific subset of ETGs and quality measures are assigned to the peer group General Surgery. The Peer Group Name identifies the comparison group for the report. Note that the episode information on which all of this report is based is for completed, non-outlier episodes that ended during the last 12 months of the report period. Episodes may be attributed to only one provider in a peer group, but may be attributed to more than one peer group.
Number of Providers: This field, in a group report only, reports the number of providers in this peer group with the same affiliation ID, who had episodes attributed during the 12 month reporting period.
Number of Episodes: The total number of complete, non-outlier, within the peer group definition episodes attributed to the providers included in the report during the 12 month reporting period
Case Mix Episodes: This ratio expresses the relative health risk represented by the report entity's attributed episodes compared to that represented by the attributed episodes for the peer group. Episode Risk Groups (ERGs) are used for the calculation. Thus, a value equal to 1 would indicate that the disease burden for the episodes attributed in this report is exactly the same as the disease burden for all of the episodes captured by all members of the peer group.
Overall Quality Index: This ratio represents the relative performance of the report entity on the set of evidence-based medicine measures included in the peer group definition compared to the performance of the peer group as a whole. The set of rules included for primary care is quite large, approximately 250 rules, spanning a number of disease entities. The higher the index , the better the performance of the report entity relative to the peer group on these measures. This ratio will usually be different from the Quality Index in the Quality Measures section of the report as that index only represents the relative performance for the subset of measures included in that section of the report.
Overall Cost Index, Episode: This ratio represents the costs for the episodes attributed to the report entity relative to the average costs for the peer group for the exact same set of episodes, with the comparisons made at the episode severity level. The lower the number, the lower the costs are for the report entity relative to the peer group for the set of episodes. Note that all claims are standard priced, eliminating contractual payment differences as drivers of cost differences throughout the report. Cost differences are driven by units of service and mix of services for an episode of care. The overall cost index is adjusted across the peer group by weighting at the service category level to account for differences in estimated impact of control by a peer group specialty (see Cost Index Summary, by Service Category section of the report explanation).
Confidence Intervals: Each index has a range that reflects the 90% confidence interval around the index value. The confidence intervals are used to indicate the reliability of the value. A 90% confidence interval represents the 90% statistical probability that the value actual value lies within that interval. As a general rule, the more episodes or EBM measures the narrower the confidence interval.
The asterisks associated with the confidence intervals represent the statistical significance of the difference between the index and the peer group average, expressed as a p value. This is attempting to answer the question, "is this entity's performance truly statistically different from peers?" The peer group index is 1.0. One asterisk, representing $p< 0.10$, would indicate that the answer to that question is yes, as the 90 % confidence interval does not include 1.0. Two asterisks, representing $p< 0.05$, would indicate that the answer to that question is a statistically stronger yes, as the 95% confidence interval does not include 1.0.

Episode Case Mix Summary

This section of the report is a tabular summary of the top 10 episode families by total cost (number of episodes times average standard cost per episode for the report entity). This provides an overview of those episodes that contribute the most to costs of care for the report entity. Note that the term actual throughout the report should be interpreted as the standard priced result for the report entity for cost measures and the actual encounters for the report entity for encounter measures. These results will be compared to the standard priced results and encounter results for the peer group for the exact same set of episodes, with the comparisons made at the episode severity level.

Quality

WHIO, in conjunction with its Clinical Advisory Panel, has chosen a subset of the evidence-based medicine quality measures to be displayed in this section of the report. The measures in this report are only for rules associated with the episodes attributed to the report entity. Thus, if an internist affiliated with the entity in the report cares for a diabetic, but the diabetic's episode of care is attributed to an endocrinologist and does not meet the threshold (thirty percent of services) for attribution to the internist, the EBM measures for which that diabetic met the inclusion criteria would NOT be included in the internist's report. They would be included in the entity report that includes the endocrinologist. The Number of Quality Opportunities in this section contains, in the total column, all patients who had an episode attributed to the report entity who met the requirements for inclusion in the quality measure denominator. The actual rate is the rate for the report entity, and the peer rate is the rate for the entire peer group. The quality index is the actual rate divided by the peer rate. The quality index total represents the index only for the rules displayed in the Quality Measures section of the report. It will typically be different than the Overall Quality Index in the Specialty Patterns of Care Section, which represents performance across all of the EBMs included in the peer group definition. Indices on individual quality measures should only be considered meaningful if there are sufficient numbers in the total opportunities column.

Cost and Use

The 3 subsections of this report contain cost and utilization information for the report entity. Every claim that is part of an episode attributed to the report entity or the peer group is allocated into one of the seven service categories, based on CPT/Revenue code, place of service, rendering provider and ordering provider. This section of the report provides a ratio of the standard pricing results for the report entity relative to the exact same mix of episodes, compared at the severity level, for the peer group. This, combined with the next section of the report, helps to illuminate specific drivers of cost variation from the peer group. Examples of services that are included in the different categories are:

Hospital Services: All inpatient facility services; Outpatient facility services, including surgery, diagnostic (other than imaging and lab), and facility-based PT/OT; DME/MedSurg supplies

Radiology: Facility and professional components of radiology services, excluding therapeutic radiology. Selected diagnostic x-rays performed or ordered by a primary care provider are also excluded (these are assigned to Primary Care Core per below)

Laboratory: Facility and professional components of laboratory and pathology services, excluding selected lab tests performed or ordered by a primary care provider and typically performed in a PCP/physician office

ER: Professional and facility components of ER services

Primary Care Core: Evaluation and management services rendered by a primary care provider (office visits, nursing home visits, preventive care – does not include inpatient visits, ER visits or consultations); CXR, abdominal XR, and sinus XR; Minor lab procedures; Minor procedures and diagnostic tests, including diagnostic endoscopy, EKG and pulmonary function tests

Specialty Care: Evaluation and management services rendered by a physician other than a primary care provider; Diagnostic testing (other than lab and radiology); Allergy tests; Physical medicine and rehab; Professional component of surgery and anesthesia; Chemotherapy

Pharmacy: All pharmacy claims

The summary and measures subsection provides the cost and encounter detail that drove the service category indices in the previous subsection. Again, the values labeled actual represent the performance of the report entity. See portion of Episode Cost and Detail labeled "Using the cost and encounters ratios."The Actual Total Cost column provides the ability to get a sense of the relative importance of a particular service category variation to the overall cost variation for the report entity. For example, a total cost for a service category of $50,000 with a cost index of 2.0 represents $25,000 of cost variation (1.0 for the peer group would be $25,000), while a total cost for a different service category of $500,000 with a cost index of 1.25 represents $100,000 of cost variation (1.0 for the peer group would be $400,000). Note that that Overall Cost Index in this section is the same as in the Specialty Patterns of Care overview and is different, in most cases, from the Cost/Episode Index. That is because the Overall Cost Index is compiled from service category indices that are weighted depending on the peer group specialty. For example, the Primary Care Core category is weighted higher for an internist than for a general surgeon, while the Hospital category is weighted higher for a general surgeon than for an internist.

Utilization Rates Per 1,000 Episodes
This utilization rates subsection provides additional detail for helping to hone in on report entity cost variation. Some of these rates tie directly to the service categories in the Cost Index Summary above. The rates reflect results for the report entity (actual) relative to the exact same mix of episodes, compared at the severity level, for the peer group. Note that the results are reported as rates per 1,000 episodes as opposed to per 1,000 patients. The exception to this is the generic prescribing rate, which is defined as number of generic prescriptions divided by the number of prescriptions for which a generic rate is available for the episodes attributed to the report entity. Prescriptions for which a generic is not available are not included in the denominator. This can result in different rates than those seen in other generic calculation rates performed across all prescriptions. The index is calculated by dividing the actual rate by the peer rate. A higher index for generic prescribing rate would generally be considered better performance, while lesser utilization indices for the other metrics would typically be considered better performance. Note that the three inpatient measures may not be consistent with the Hospital service category above, as inpatient services are only one component of that category and typically represent less than half of the costs for the category.

Episode Detail

This section contains information similar to that in the Cost and Utilization Summary Measures section, except at a level of detail of the episode family. These are specific to the peer group, reflecting the most common episode families for that peer group, and there can be up to eight episode families displayed in a report. The Total Specialty Episode Costs represent the standard pricing costs for all of the episodes in that episode family attributed to the report entity. The comparisons are exactly the same as in the Cost and Utilization Summary and can be used similarly to determine the significant drivers of any cost variation and whether that variation is being driven by units or mix of services.

Using the cost and encounters ratios:

The encounters category can encompass a wide variety of unit types, ranging from E&M visits to units of chemotherapy administered. While caution should be exercised in some categories due to unit type variety, comparing the cost index in a service category with the relative ratio of the encounters can help illuminate whether units of service or mix of services is driving variation. For example, if the cost index is 1.5 in pharmacy where the actual encounters are 1,500 and the peer encounters are 1,000, it is likely that the cost variation of 50% (1.5 represents 50% more than the 1.0 of peers) is being driven by units (in this case prescriptions, most likely), rather than mix of services (more expensive medications). The ratio of actual encounters to peer encounters is 1.5 (1500/1000), exactly the same as the cost ratio. If in this case the actual encounters were 1,000, and the peer group encounters, 1,500, the encounter ratio would be 0.67 (1000/1500), making it very likely that mix of services was driving the cost variation of 50%.

Again note that comparisons at the episode family level should only be considered meaningful if there are sufficient numbers of episodes (a minimum of 30 has been suggested by some authorities).