

EHR – Based Quality Measurement & Reporting: Critical for Meaningful Use and Health Care Improvement

A Policy Paper of the
American College of Physicians

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Introduction

This paper calls for the promotion of electronic health record (EHR)–based quality measures and reporting* as a critical component of achieving meaningful use of health information technology to improve health care quality. Current methods of quality measurement typically rely upon claims-based administrative data, which can be inappropriate for use in quality measurement because they are often an incomplete reflection of care processes and patient outcomes.^{1,2} Quality measures should provide timely, understandable, comprehensive, clinically valid, and meaningful feedback to physicians and their practice teams.³ These measurement attributes are essential to attain and sustain meaningful improvements in health care delivery, patient outcomes, and experience. Movement toward EHR-based quality measurement and reporting will take significant health care system resources but if done correctly, the result should be a process that is clinically relevant, accurate, and trusted by the full range of stakeholders, particularly patients and their physicians.

A shift to EHR-based quality measures and reporting will also help health care providers respond to other important issues. Public and private payers are calling for fundamental change in how we pay for health care so that physicians and other health care providers can be compensated based on the quality and economic value of care they provide and not just the volume of services rendered. Americans are calling for more transparent and meaningful measurements to help them evaluate the quality of health care they receive. As a result, the American Recovery and Reinvestment Act (ARRA) has mandated measurement and reporting as a condition for receiving federally funded EHR incentive payments.⁴ It is also evident that current federal health care reform legislation is promoting increased payments for quality measurement and reporting.⁵

The recommendations in this paper can guide policy and technology efforts to ensure that EHR-based quality measurement and reporting produces more accurate and useful information for all health care stakeholders.

* This paper refers to “EHRs” and “EHR systems”. It is important to understand what is meant when this term is used. See the end of this paper for definitions of electronic health record (EHR) and electronic medical record (EMR). Reporting includes the functions of calculating and displaying information.

Background

Measuring the ability of health care teams to improve health care quality is well established.⁶ The goal of performance measurement is to enable physicians, other health care providers, and health care organizations to evaluate the care that they deliver using quality measures that have been validated thoroughly in practice settings. Quality measures are typically derived from evidence-based clinical guidelines based on clinical research and expert opinion. Well-designed guidelines typically contain decision points where alternative clinical actions are suggested based on patient characteristics such as age, gender, and clinical condition. The actions taken at these decision points are appropriate targets for measurement.

Due to the limitations of current health care information systems, quality measures typically have been applied retrospectively, often through labor-intensive manual processes. Health care organizations and clinical teams must review patient charts, compare patient characteristics with criteria listed for each applicable quality measure or group of measures, and compile reports that compare actions taken on behalf of those patients with actions specified in guidelines. These manual reviews are often performed by professional, credentialed, clinical and nonclinical personnel and represent a significant investment of time and resources. The time between care delivery, chart abstraction, data analysis, and distribution of final reports significantly limits the usefulness of this information for improving health care delivery. Hence, the cost and complexity of collecting and reporting data represent major barriers to quality improvement for many ambulatory practices and health care systems.

In response to the challenges of data collection and analysis for these important measurement systems, health care payers have a preference for using claims data created for payment purposes rather than chart abstraction. While the reliance on claims-based administrative data reduces the cost of measuring quality, claims data can be inaccurate for use in quality measurement because they are often an incomplete reflection of actual and relevant care processes and patient outcomes.^{1,2} Existing coding schemes through the ICD-9 system were not originally designed to accurately and efficiently capture the detailed clinical information needed to construct meaningful quality measurements. Further, administrative data are only as good as the coding accuracy and detail entered on the submitted claim – and only for services for which physicians are permitted to charge unless additional administrative processes are employed, such as use of G-codes or CPT II codes. Clinical teams must often submit additional information with their claims, such as unique codes or copies of medical records. In addition, a claim may list only a single problem for billing purposes, even though several other problems may have been addressed during the encounter. Attribution of patient care to the correct health care provider is also a challenge for measurement systems based on claims data. With all these limitations, claims-based quality measurement is considered by many not to be clinically credible for several aspects of care.

A new approach to quality measurement and reporting is being developed to dramatically reduce data collection inaccuracies, costs, and time. This approach uses clinical data that are entered in “real time” through an EHR configured to rapidly report measures of value-added care processes (high quality, low cost). Fundamental changes will be needed in order to support the movement toward EHR-based reporting. Moving from current reporting systems to EHR-based reporting will require a concerted effort on the part of physicians and other health care providers, measures developers, policy makers, federal/state agencies, standards developers, EHR vendors, payers, and others. However, the challenges ahead will be worth the effort. EHR-based reporting will enable new measurement capabilities, including incorporation of patient-supplied data (e.g., vaccination status, medication adherence), that, along with traditional medical record-based data now generated by the clinical team, could have a dramatic impact on the quality of care and assessment of that care.

ACP POLICY STATEMENTS

Position 1: The primary purpose of EHR-based quality measurement and reporting should be to facilitate higher-quality, cost-effective health care.

ACP is concerned that the growing focus on physicians' need to meet federal regulatory and commercial insurer contractual requirements for quality reporting will deflect efforts and resources that should be focused on achieving quality improvements. Throughout this discussion, it is crucial to clearly distinguish between measurement to guide quality improvement from performance measurement for accountability and public reporting potentially tied to reimbursement. Quality measures and reporting are common to both approaches. The difference is between use of the information generated for internal quality initiatives and use for public reporting. Ideally, well-implemented quality measures should provide valuable guidance and assistance for quality improvement activities occurring throughout the care-delivery process. External reporting on the performance of quality measures is, however, a separate activity that may lead to improvements in care delivery, but will not affect the patient rapidly or directly. Optimally the same measures of quality, efficiency, care coordination, and outcomes should both guide improvements to care-delivery processes internally and provide evidence of the extent of those improvements externally as part of a well-designed public reporting process. ACP has previously articulated principles for quality measurement development and public reporting, which include the following key points regarding the selection of measures.

Quality measures to assess physician performance should be:

- Evidence-based or, in the absence of sound scientific evidence, based on expert consensus;
- Relevant to the physician's clinical responsibilities;
- Valid and reliable;
- Practical;
- Clearly defined;
- Have actionable measurement goals;
- Stable over time, unless there is compelling evidence or a justifiable reason to modify them;
- Related to clinical conditions prioritized to have the greatest positive impact^{3,7}; and
- Uniform across all reporting programs (public and private) with respect to the definition, data required, and methodology of reporting accepted.

Position 2: In order for an EHR-based quality measurement and reporting program to engage all health care stakeholders, it must use clinically relevant measures and be accurate and trusted by a full range of stakeholders, particularly patients, physicians, and other health care providers.

EHR-based quality measurement and reporting should focus on measures of quality that are meaningful to patients, physicians, and the other members of the patient's care team. Meaningful measures of quality that result in timely, understandable, and focused feedback to physicians and their practice teams should help improve clinical outcomes, contribute to the health of the community, and positively affect indicators of patient experience with the health care system. Further, quality measures should provide context-appropriate guidance and assistance wherever and whenever the patient needs care.

Position 3: Data to support EHR-based quality measurement and reporting should rely upon information routinely collected during the course of providing clinical care, including relevant data supplied by patients.

There is compelling evidence that systematic approaches to care process improvements achieved through effective evidence-based quality measurement can result in better patient outcomes.^{8,9} Unfortunately, current methods of quality measurement and reporting remain highly challenging. Quality measures often reflect the fragmentation of health care processes instead of taking a systems approach to assessment. Further, payments to support quality improvement efforts are often inadequate. Well-designed EHRs and other health IT applications should therefore be designed to efficiently and simultaneously support improvement of the care-delivery process, automate reporting of quality measures of care processes, and support assessment of patient outcomes across the health care system. In addition, capturing structured patient level data originating from other information systems can supplement data collected from EHRs.

It is important to note that current stand-alone EHR systems in doctors' offices are not capable of collecting all of the data needed for quality reporting without significant manual intervention. Much of the data needed must be obtained from other sources, such as diagnostic laboratories or consulting physicians. The ability to exchange structured data that meet interoperability standards is just as important to the success of EHR-based reporting as is the functionality of the EHR system itself.

In order to meet new federal standards, EHR systems will require other new functionalities not typically found in existing systems. For example, practices will need sophisticated practice-based registry capabilities to manage and report on populations of patients. Additional features of EHR systems should include the ability to efficiently collect patient-supplied information through such vehicles as connected personal health records, patient portals, and remote monitoring.

Position 4: EHR-based quality measurement should begin with the goal of facilitating the real-time collection of data that support the effective use of point-of-care clinical decision support algorithms.

The same evidence-based clinical guidelines upon which EHR-based quality measurement are based can in turn inform the development of robust clinical decision support systems (CDSSs). CDSSs could provide real-time, patient-specific recommendations based on information collected as a consequence of routine clinical documentation at the point of care, including stated patient preferences and unique characteristics (such as the preferred method of learning and known barriers to adherence to care plans). This type of information has the potential to significantly improve care processes and patient outcomes. Actions of physicians and the clinical team in response to recommendations provided by CDSSs could form the basis of future assessments of quality delivered and potentially become part of ongoing maintenance of certification and achievement of continuous life-long learning objectives. While there is clear value in implementing systems that are capable of offering guidance and tracking actions, it is not always appropriate for doctors to accept and act on every guideline-based recommendation of such systems. In such cases, CDSS must offer an easy way to indicate why a recommendation was not followed. Further, there is good evidence that physician-recorded medical exceptions to CDSS guidance are correct most of the time.¹⁰

Position 5: EHR-based quality measurement and reporting must not increase administrative work and/or impose uncompensated financial costs upon physicians and other health care providers, health care organizations, or patients.

EHR-based quality measurement and reporting has the potential to reduce the administrative challenges of current quality measurement and reporting activities, but only if quality measurement and reporting

rely on the re-use of data collected during the routine workflow of clinical care, including data entered to document exceptions to CDSS alerts (i.e., medical or patient reasons for not following a recommended practice). Most hospitals and clinical practices (particularly primary care practices) operate in a challenging financial environment and do not have readily available resources to invest in these activities unless the costs of doing so are offset by improved productivity, reduced administrative burdens, and enhanced reimbursement based on demonstrated quality measures and reporting.

Position 6: Data elements that comprise quality measure data sets should be defined in a standard way to enable health IT developers to implement them effectively.

Quality measure developers must provide standard definitions for the data elements necessary to construct proposed measures and end-users must agree to use these elements consistently. The proposed measure specifications must also be clear with regard to the context of each data element (e.g., problem list versus family history). It is likely that quality measures currently in public use may have to be rewritten to use data elements captured and stored in EHRs that differ from data derived from more traditional manual chart abstraction and claims data collection methods. For reports to be generated automatically from EHRs, quality measures must specify the definitions and appropriate codes for each data element required for the measure. For example, an active problem in the patient's problem list clearly does not have the same meaning as the same problem if it is found in the family history. Finally, not only must measure developers specify exactly what recorded data elements they want to use to represent a specific measure attribute, they must also agree to define and use the data elements consistently across different measures.

As medicine changes, so must the quality measures. Careful versioning of measures, data elements, clinical vocabularies, and quality data sets must be implemented at the beginning of any measurement program to avoid confusion as measures are updated. In general, measures should be stable for at least two years unless there is compelling evidence or a justifiable reason to modify them, such as an evidence-based update.

Position 7: ACP supports the commitment of the HIT Standards Committee, the National Quality Forum (NQF), the NQF Health Information Technology Expert Panel (HITEP), Health Information Technology Standards Panel (HITSP), and others to develop unified standards for structured, codified data elements, calculation logic, measure structure, and reporting structure for quality measures. The development of these standards requires concerted and consistent input from all health care stakeholders.

Over the past few years, many stakeholders have come to a shared understanding of the need for standards in order to facilitate the development of quality measures and accurate, comparable reports on quality. A carefully coordinated set of independent efforts involving a broad range of stakeholders will be required in order to develop a workable set of standards.

There are several examples of efforts underway that highlight the principles being advocated by ACP in this policy paper. These examples include:

- The Health Information Technology Expert Panel (HITEP) II effort to embed quality measurement into EHRs using values coded in clinically appropriate terminologies, such as SNOMED¹¹;
- The HITEP II effort to develop and implement a Quality Data Set (QDS), encompassing all of the data elements required by a broad set of measures, that will reduce or eliminate the need for providers to report on isolated measures¹²;
- Development and endorsement of quality measures designed to work with EHRs;

- New EHR certification requirements for support of the collection, calculation, display, and automated reporting of standard measures;
- A coordinated plan to migrate quality reporting to a platform in which electronic health records and health information exchange-based services work together to collect and report measured data
- A collaborative project involving American Medical Association (AMA), National Committee for Quality Assurance (NCQA), Centers for Medicare & Medicaid Services (CMS), and Health Information Management Systems and Society (HIMSS) developed a rough draft of a quality measure standard. This has now been taken on by Health Level 7 (HL7), and a first version of a measure standard was produced in the Fall of 2009¹³;
- An HL7 project has completed a first version of a standard for quality reporting¹⁴;
- Several expression languages have been proposed for encoding quality measure construction and calculation logic that supports display and reporting; and
- HITSP has been charged by the Office of the National Coordinator for HIT (ONC) with developing measures specifications for several specific CMS-chosen inpatient ambulatory measures as a pilot test.¹⁵

Many of the leading experts from across the quality measurement spectrum are volunteering to work on these efforts. However, the development of a single, comprehensive set of standards will require careful, ongoing coordination of all these activities.

It is important that standards developed for quality measurement support the development and use of open and transparent measures, including the decision logic and algorithms. Closed or proprietary measure components should not be supported.

Linkage to Quality Improvement and Meaningful Use of Health IT

As quality measures are developed in a standardized way that specifies EHR data elements and calculation logic, they will provide a new and powerful building block of CDSS tools designed to improve patient outcomes. The linkage between CDSS, evidence-based guidelines, and quality improvements integrated with improved workflows for the clinical teams will provide them with more relevant, timely, and useful information.¹⁶ This linkage will also facilitate the widespread development of quality measures that reflect the care needs of increasingly specific groups of patients supporting the personalization of health care and improved patient outcomes. Further, if EHR-based collection of standardized quality measures produces data that are consistent from practice to practice and from setting to setting, the quality of care that patients receive as they move through the health care system can be meaningfully assessed and appropriately attributed and can provide the ability for relevant comparisons. For example, measures related to the adequacy of transition planning and care coordination could help identify system failures and best practices to inform quality improvement efforts. These comparative data could then be used to identify the types of care-quality failures identified with specific transitions of care and inform quality improvement efforts at those transitions.

EHR Data Can Fundamentally Support/Inform Care Processes

Quality measurements obtained from administrative data sources sometimes fail to identify patients with deficiencies in their care and inadvertently include patients for whom a particular intervention is not warranted.^{2,17} For example, some patients with mental health diagnoses may never have had a specific diagnosis code entered on a health insurance claim. In contrast, EHR data can be used to identify patients with a mental health condition more accurately through use of algorithms that analyze problem lists, results of screening tests, encounter diagnoses, medications, and test results. If designed and implemented correctly, EHR-based quality measures can also be used to identify the population of patients likely to

benefit from a particular intervention that should be included in the denominator of a quality measure (e.g., women who should, according to evidence-based guidelines, be considered for cancer screening) while also excluding those for whom the measure should not apply.

EHR data can also be used to more accurately determine which patients have received an appropriate intervention (i.e., the numerator). Determining which patients have received an appropriate intervention can be as simple as determining if a test was performed or a medication prescribed. However, for more complex measures, this can be challenging. For example, current quality measures for blood pressure control assess the blood pressure at the last visit. However, a patient whose average blood pressure is at goal may have a single elevated reading due to normal daily variation. Using the average blood pressure is an alternative measurement approach, but this can be problematic because a patient whose antihypertensive medications are being adjusted may have an uncontrolled average blood pressure in the past but a controlled blood pressure at the most recent visit once an adequate drug regimen is reached. These problems can be overcome by using EHR data and more complex logic that labels a patient's blood pressure as controlled if the recent average *or* most recent blood pressure is at or below the recommended target. It is possible to go one step further to distinguish patients with severe disease receiving aggressive treatment from those receiving inadequate care with slightly more complex logic that considers the patient's blood pressure to be controlled if three or more blood pressure medications are listed as active on the medication list. This approach would greatly improve the accuracy of clinical decision support tools in EHRs as well as quality reports, and it is currently being tested in demonstration projects at Northwestern University.¹⁸

It is important to note that EHR-based reporting could increase the risk for disclosure of potentially sensitive, identifiable patient data. Privacy advocates are already expressing concerns about this form of reporting. These concerns must be addressed if the public is to support widespread reporting of quality measures, especially if reports include medical and patient reasons for not following recommended guidelines.

EHR Data Can Improve Identification of At-Risk Patients

An important cause of inaccuracies in quality measurements derived from administrative data is the inability to identify patients who should not be included in a specific quality measure assessment due to clinical contraindications or personal preferences (e.g., financial preferences).¹⁷ For this reason, the development of standardized codes for contraindications and personal preferences must be a core component of every quality measure. Studies in the United Kingdom have shown that physicians' documentation of contraindications and patient preference are generally reliable.¹⁹

Once denominators, numerators, and exceptions are precisely defined, the specific codes (e.g., ICD-9, SNOMED, LOINC, RxNorm)²⁰ for identifying the information must be defined and programs written to compute the number of patients who meet the criteria for denominator, numerator, and exceptions. Field testing is the next step, followed by national endorsement, implementation, and measure maintenance. Having a standardized set of data elements incorporated in EHRs will support implementation of new measures that will be required as new scientific information becomes available. The creation of a single set of standards for quality measurement and reporting is already having the effect of forcing vendors to build quality measures and automated reporting into their EHRs.²⁰ This market response to the federal commitment to unified standards and paying for quality will benefit all HCOs, but particularly small physician practices and hospitals that do not have the resources to do (or outsource) custom EHR programming.^{22,23}

Use of the Terms *EMR* and *EHR*

This paper refers to EHRs and EHR systems and it is important to understand what is meant by this term. Before 2004, the term *electronic medical record* (EMR) was used to signify the computer systems that practices and hospitals purchased or licensed to track information about their patients. At the same time, *electronic health record* came to signify the largely virtual and aspirational concept of the complete health record of a patient. Usually, a patient's health data are scattered across many systems in many institutions, and the concept was meant to imply a future technical ability to use technology to provide a single view of these disparate data about a patient. The definition became confused in the 2004 Executive Order that called for the development of an EHR for every American. Ever since the publication of that order, the federal government has used the term "EHR" to mean both the system that a practice uses and the complete record of a given individual. A number of issues in this paper are meant to refer both to the clinical systems and patient records. Rather than add to possible confusion, we have chosen to use "EHR" as it is used by the federal government.

Conclusion

The goals of data collection go well beyond the evaluation of physician performance, such as safety monitoring and comparative effectiveness research. Many policy advocates, including members of the recently formed HIT Policy Committee, have argued that data collected for care provision and quality measurement should be designed from the outset to support research and to develop clinical guidelines and future quality measures. It is critical that future quality measures be specified so that required data elements can be easily and reliably identified within the variety of EHR systems in use and within the variety of settings in which they are used. Until and unless we have far more standardization of capturing, organizing, and reporting information from EHRs as well as exchanging information between health care systems, it will be challenging to generate robust indicators of meaningful use of health IT or to provide accurate, relevant, and trusted clinical guidance to inform health care delivery and patient care.

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