1. Introduction

Background

The Quality Measurement and Health Assessment Group (QMHAG) in the Office of Clinical Standards and Quality of the Centers for Medicare & Medicaid Services (CMS) desired a more standardized and efficient management system for the development and maintenance of quality measures. QMHAG launched a project in October 2003 to design and implement the Measures Management System.

QMHAG initiated the project because there was increasing demand from a wide variety of stakeholders for accurate measures of quality to determine whether high-quality care was being provided consistently across the health care delivery system. While quality measurement is a critical tool for improving quality and for supplying information to consumers and purchasers in a market-driven health system, the field is still in its adolescence. In recent years, there has been a large and growing number of quality measurement and reporting initiatives resulting in a proliferation of measures that are often duplicative and unduly burdensome on health care providers. The lack of measurement standardization also results in confusion for the public.

The Institute of Medicine (IOM) recommends that the federal government assume a strong leadership position in driving the health care sector to improve the safety and quality of health care services (Leadership by Example, 2003). Over the past several years, CMS has responded to this recommendation by increasingly taking the lead in quality measurement and public reporting efforts. QMHAG is charged with this major responsibility. It manages an array of quality measurement activities, including public reporting initiatives for hospitals, nursing homes, home health agencies, and end-stage renal disease (ESRD) providers. QMHAG also serves as the CMS expert on quality measurement for demonstration projects, surveys, and certification activities.

QMHAG works closely with other components within CMS, including the Quality Improvement Group (QIG), as well as with other organizations such as the Agency for Healthcare Research and Quality (AHRQ), the National Quality Forum (NQF), and the Veterans Health Administration (VHA). QMHAG also works closely with other organizations that develop measures, such as The Joint Commission, the National Committee for Quality Assurance (NCQA), and the American Medical Association-convened Physician Consortium for Performance Improvement (AMA-PCPI).

QMHAG contracts with external organizations to assist in the development and implementation of quality measurement. These include QIOs, university groups, and consulting groups.

Due to the increased variety and volume of quality measurement activities managed by QMHAG staff, QMHAG leadership recognized a need for an efficient, transparent, flexible, predictable, and well-coordinated management system. The Measures Management System is expected to assist QMHAG in meeting a diversity of policy and program needs, and the Measures Manager is expected to help coordinate the myriad processes that the quality measures undergo during the various stages of their life cycles.

Why Version 7?

Since the release of the Measures Management System Blueprint, Version 6 in 2008, there have been significant changes in the quality measurement environment. These changes include the following:

- In 2008, the National Quality Forum (NQF)-sponsored National Priorities Partners (NPP) introduced their first set of health care quality goals.
- Also in 2008, NQF sponsored the first measure harmonization project, focusing on the development of standard measures for adult influenza immunization and adult pneumococcal immunization.
- More measures are being submitted to NQF, generating greater competition for NQF's endorsement.
- Significant discussion has arisen surrounding data aggregation across payers in chartered value exchanges (CVEs) and the generation of quality measures for local health care quality efforts.
- There has been a renewed emphasis on the development of health care quality measures, with the renewal of discussion of health care reform.
- As all of these initiatives have been taking place, there has been increased interest in electronic health records (EHRs) and health information technology (HIT). With the passage of the American Recovery and Reinvestment Act of 2009 (ARRA), emphasis has been placed on the "meaningful use" of HIT, which includes the generation of quality measures from HIT programs. The HIT Standards Panel (HITSP) was established in 2005 by the Office of the National Coordinator for Health Information Technology (ONC) and the HIT Expert Panel (HITEP) was convened by NQF in 2007, with a successor (HITEP II) convened in 2008. HITEP II has developed the Quality Data Set, a collection of standardized data fields and a process for continuing development of new data fields for use with quality measures. HITEP, HITSP, and the Collaborative for Performance Measure Integration with Electronic Health Record Systems (jointly sponsored by the AMA and NCQA) are still developing methods of producing measures from EHRs.

CMS has used the Measures Management System for four years, and in that time many lessons have been learned regarding the system's strengths and limitations. In response to the changes in the quality measurement environment as well as the users' feedback, the Measures Management System has been updated to reflect a more flexible structure, the lessons learned, and the new and enhanced products created for and requested by the users. It provides clearer guidance, with less confusion and less duplication of effort than the previous versions. This version is more user-friendly, more efficient, and more effective in guiding the measure contractors and CMS staff in the development, implementation, and maintenance of the highest-caliber quality measures possible.

In order to increase efficiency, the Measures Management System process will increasingly be automated in the Quality Measures Management Information System (QMIS), allowing for centralization and some extent of standardization of basic processes. Version 7 of the Measures Management System includes steps that will allow CMS to be more responsive to the need for transparency; for diverse, multi-stakeholder input; and for measure contractors to more easily justify

their measures to NQF, providers, and stakeholders. Some of these processes will now be handled through QMIS. Measures Management System forms have been modified based on user feedback and instructions on the use of the QMIS have been included. Some portions of the Measures Management System have been rewritten to allow for greater flexibility while others are now required in order to standardize the processes. Instructions for the development of a business case for each measure have been added, and the measure evaluation criteria have been updated as NQF's evaluation criteria have been updated.

Still to Come

Despite the many improvements included in Version 7, the Measures Management System still has some growing to do. Version 7 does not yet address survey-based measures due to the complexities associated with the development of this type of measure. Version 7 also does not yet account for measures of patients with multiple complex medical conditions, such as those with diabetes, heart disease, and chronic obstructive pulmonary disease. Version 7 also does not address value-based purchasing, efficiency, or HIT measures since these measures are still evolving. Future versions of the Measures Management System will be needed to address these and other issues.

Design Assumptions and Principles

Assumptions

The following assumptions were used in undertaking the task of designing the Measures Management System:

- A major goal of the Measures Management System is to produce scientifically acceptable, valid, and reliable quality measures.
- QMHAG is the primary business owner of the Measures Management System.
- Transparency is in the best interest of all CMS stakeholders.
- The Measures Management System incorporates the best of CMS management processes, as well as those used by other measure developers.
- Coordination with other CMS components is critical. The Measures Management System requires a tightly coordinated effort among CMS components and external entities.
- The Measures Manager is an integral part of the system and will work closely with CMS leaders and staff in supporting the management and coordination of measure planning, development, and evaluation activities.
- The Measures Management System consists of efficient processes that manage the quality measures' life cycle.

- CMS will continue to use NQF endorsed measures. To the extent feasible, the Measures Management System processes will be consistent with NQF requirements.
- CMS will increase its use of quality measures for VBP programs.

Design Principles

The following guiding principles were used in designing the Measures Management System:

- Transparency: Decision-making processes and criteria are public knowledge. Input is sought from multiple stakeholders.
- Clear accountability: Roles and responsibilities of CMS, measure contractors, and the Measures Manager are widely understood, recognized, and honored.
- Standardization: Substantially identical processes are used across measure settings, including decision-making criteria.
- Optimum communication and flow of information across CMS, the measure contractors, and the Measures Manager.
- Coordination and collaboration: Work is done with other CMS and non-CMS agencies and external measure developers as appropriate.
- Evidence-based processes.
- Efficiency: Avoidance of non-value-added tasks.
- Harmonization: Whenever feasible, the system should reflect the same measurement development and evaluation policies as those already in use by CMS or those developed or used by external measure developers.
- Predictability: Timing, quality, and required resources of all processes can be predicted based on the standardized processes and experience gained with implementation of these processes.
- Responsiveness: The system has the ability to meet the diverse needs of CMS and its partners.

Using these assumptions and design principles, the goal was to develop a system that would allow measure developers to create measures with high degrees of importance, scientific acceptability, feasibility, and usability.

Design Approach

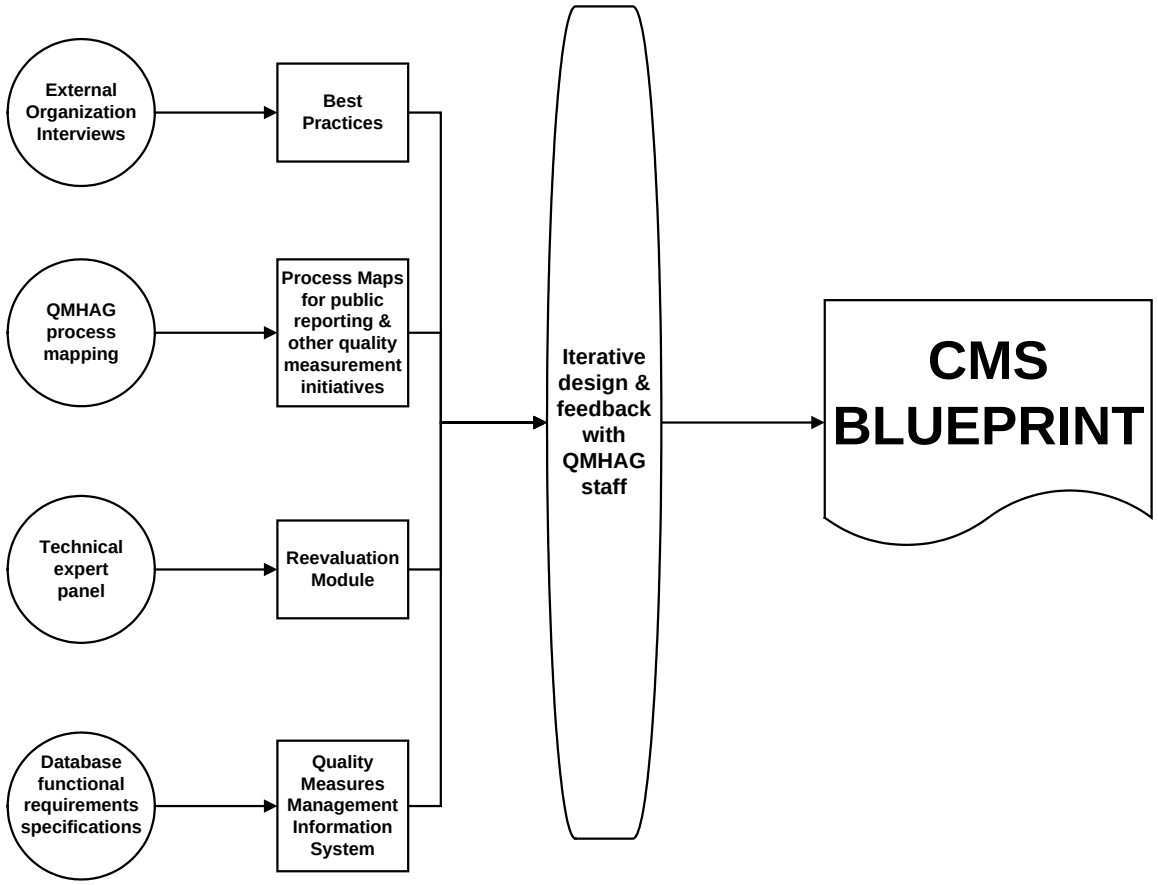
Original Blueprint

As is shown in Figure 1-1, the Blueprint of QMHAG's Measures Management System was designed based on the quality measurement work at CMS, augmented by the best practices of other major measure developers that develop and implement measures. Sound business process

management principles, as exemplified by the Malcolm Baldrige Award criteria and Lean methodology, were also incorporated.

Structured interviews were conducted with QMHAG staff as well as major measure developers, and a series of process maps were developed. Simultaneously, a technical expert panel (TEP), consisting of representatives from the major measure developers, quality measurement experts, and major purchasing alliances, was convened to assist in developing the framework for a reevaluation process, including the frequency, depth, and parameters of the review.

Figure 1-1—Design approach to Measures Management System Blueprint



To assess the best practices of other major measure developers, multiple telephone interviews were conducted with the key personnel of these organizations using a set of standardized interview questions. Flow charts were developed based on the information obtained, which were later sent back to the organization personnel for review. Additional telephone interviews were conducted as needed. Each organization self-reported its best practices or strengths. In addition, the following criteria were used to evaluate these practices:

- Logical—The practice links other parts of the system in a reasonable and understandable manner.

- Systematic—The practice addresses key elements of the system in a predictable and standardized manner.
- Efficient—The practice addresses optimal use of resources and reasonable timeliness.
- Mature—The practice is part of a stable system that has been improved over time.

Version 7

In updating the Blueprint for Version 7, the changes listed in the overview on page 1-2 and the feedback provided by QMHAG management and staff, measure contractors, and other major measure developers were considered. Specifically, the design of Version 7 incorporates:

- The requirements of NQF's redesigned CDP, the NQF Measure Submission Form 3.1, and the updated NQF measure maintenance policies.
- An understanding that some measures used by CMS are owned or managed by entities with no contractual obligation to CMS.
- The requirement to demonstrate a business case for each measure under development.
- Enhancements to QMIS provided by version 2.0.
- Other changes noted on the document entitled Changes Made in Blueprint Version 7.0.

Harmonization of the Blueprint

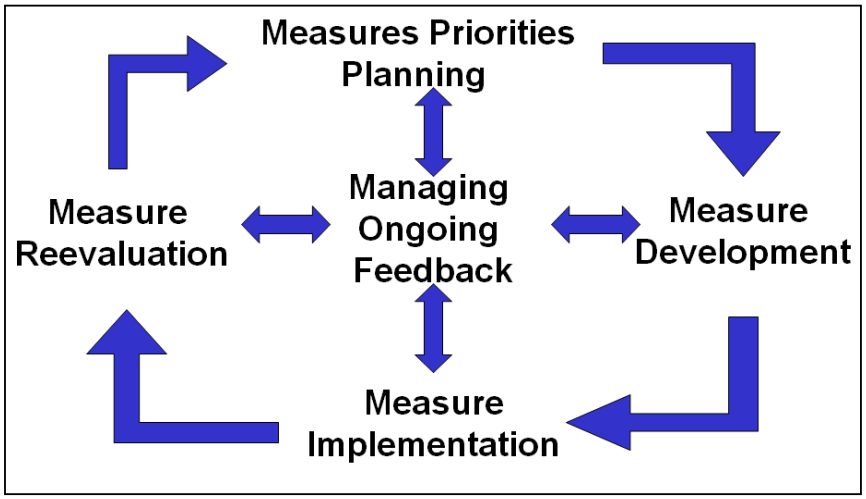
Version 7 of the Blueprint incorporates elements intended to harmonize the Measures Management System with the NQF's updated consensus development process. These elements include:

- Common data fields in the Measure Information Form (MIF, Form 6.1) allowing measures to be transferred electronically to NQF and AHRQ's National Quality Measures Clearinghouse (NQMC).
- Transparency provided by the standardized processes in the Measures Management System as well as the quality measures being housed in QMIS along with the technical specifications, histories, and justifications for the measures.
- Multi-stakeholder involvement in the measure development process through the technical expert panels and public comment processes.
- Planning for measure development that takes into consideration NQF, AQA, HQA and other external stakeholders' priorities.

Measures Management System Conceptual Framework

To comprehensively evaluate the key processes in the measure lifecycle, a conceptual framework for measures management was adapted from a framework proposed by RAND and the model in use by NCQA. (See Figure1-2)

Figure 1-2—CMS Measures Management System model



This Measures Management System framework proposes that management of measures involves four major categories of activities, including measure activities planning, measure development, measure implementation[1-1], and measure reevaluation. These four major categories are augmented by a fifth: managing ongoing feedback. This last category is linked to all the other four since measure feedback can come at any phase in the life of the measure. Within each of these broad categories are specific tasks that are performed either sequentially or concurrently.

Architecture of Blueprint

In previous versions, the Measures Management System was organized into five modules that were developed based on the measure life cycle model presented above. Version 7 is divided into sections that represent tasks that may apply to more than one of the modules. This architecture allows for more flexibility—i.e., different sections (discrete tasks) can be pulled together to support the MC's work, depending on the nature of the contract. The sections and their corresponding modules are indicated in Table 1-1 below.

[1-1] Measure implementation describes both the short-term activities to initiate measurement and the ongoing state of the measure as it is being used.

Table 1-1—Measures Management System Version 7.0 Sections Compared to Modules					
	Module				
Version 7 Section	1 Measure Priorities Planning	2 Managing Ongoing Feedback	3 Measure Development	4 Measure Implementation	5 Measure Reevaluation
1. Introduction	✓	✓	✓	✓	✓
2. Measure priorities planning	✓				
3. Managing ongoing feedback	✓	✓	✓	✓	✓
4. Measure development overview			✓		
5. Information gathering			✓		✓
6. Measure evaluation			✓		✓
7. Technical expert panel			✓		✓
8. Public comment			✓		✓
9. Measure specifications			✓		✓
10. Risk adjustment			✓		✓
11. Measure testing			✓		✓
12. Measure implementation				✓	
13. Measure reevaluation					✓
14. Measure update					✓
15. Comprehensive reevaluation					✓
16. Ad hoc review					✓
17. Harmonization			✓		✓
18. NQF			✓		✓
19. Glossary		✓	✓	✓	✓

QMIS 2.0

QMIS is the Web-based tool supporting the Measures Management System. QMIS serves three purposes:

1. It provides an infrastructure to automate the Measures Management System processes whenever possible.

2. It is the repository for the quality measures used by CMS.

3. It creates a workspace for the development, maintenance, and management of the measures.

This iteration provides the measure contractors and CMS with significant support and cost-savings by providing standardized formats and a centralized Web space for managing technical expert panels and calls for measures, and soliciting public comment on measures and ongoing feedback. All attachments to QMIS must comply with Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended by the Workforce Investment Act of 1998 (P.L. 105-220).

Role of the Measure Contractor

The measure contractor is responsible for the development, maintenance, and reevaluation of the measures, as required by their contract with CMS. The CMS-approved processes are described in the Measures Management System Blueprint. Tools to assist the measure contractor in their work are provided with each section. These tools are not intended to be additional work for the contractor, but are intended to be an integral part of their work and to produce materials that can serve as deliverables to document the contractor's progress.

In addition to the tools provided in the Measures Management System, the measure contractor has access to QMIS 2.0, which serves as the electronic workspace for the measures. QMIS 2.0 is a virtual workbench on which the measure contractors design and build the measures, refine them, and maintain them over time. It also allows CMS to review and approve those measures and any revisions required by the maintenance process. QMIS 2.0 also facilitates the creation and management of technical expert panels, calls for measures, submission of user feedback, and the collection of public comment on proposed new measures or revisions.

The measure contractor, in developing and/or updating/maintaining measures, shall:

- Utilize the processes shown in the Measures Management System Blueprint.
- Document the information gathering, measure development, evaluation, and reevaluation processes in QMIS, as well as using QMIS to provide contract deliverables whenever possible.
- Consult the Measures Manager to explain the use of the Blueprint and QMIS as needed.
- Comply with electronic data standards in the measure specifications or submit a report that identifies what data elements in the measure specifications have electronic data standards for storage and transmission of data elements.
- Identify gaps in electronic data standards and submit a gap analysis report of the needed standards to CMS. These reports will be used to support recommendations to the standard development organizations such as the National eHealth Collaborative, and the Office of the National Coordinator for Health Information Technology (ONC).
- Ensure that all relevant deliverables comply with Section 508.

Role of the Measure Contractor's GTL/PO

Within the context of the Measures Management System, the measure contractor's Government Task Leader (GTL) or Project Officer (PO) is ultimately responsible for the successful completion of the tasks in the measure contract. Specifically, this includes:

- Understanding the Measures Management System Blueprint and QMIS, and how these relate to the work of the measure contractor.
- Ensuring that the relevant sections of the Measures Management System Blueprint and deliverables are incorporated into the request for proposals (RFP) and the ensuing contract appropriately.
- Ensuring that all users from the measures contractor have appropriate access to QMIS.
- Providing basic training and first-line technical assistance to the measure contractor for the Measures Management System Blueprint and QMIS.
- Requiring the measure contractor's compliance with the Measures Management System Blueprint and use of QMIS when appropriate.
- Determining when deviation from the Measures Management System is appropriate and providing or obtaining CMS authorization for this deviation. This may be done in consultation with the Measures Manager and/or the Measures Manager's GTL/PO as well as CMS management.
- Providing or obtaining CMS approval of the measure contractor's work at the specified points in the Measures Management System Blueprint.
- Contacting the Measures Manager and/or the Measures Manager's GTL/PO with any questions about the Measures Management System Blueprint or QMIS, or directing the measure contractor to do so.
- Notifying the Measures Manager GTL when a contact has ended and QMIS access is no longer needed

Role of the Measures Manager

The Measures Manager assists CMS and its measure contractors as they use the Measures Management System Blueprint to develop, implement, and reevaluate the health care quality measures. The Measures Manager fulfills this mission by:

- Supporting CMS in their work of prioritizing and planning measure activities and quality initiatives.
- Offering technical assistance to measure contractors and CMS during the measure development and reevaluation processes.
- Providing expertise and a crosscutting perspective to QMHAG and measure contractors on measures and measurement methods and strategies.

- Keeping QMHAG informed on new developments in the quality measurement environment thereby enabling CMS to continue to be an effective leader in improving quality of care.
- Assisting QMHAG in its liaison and harmonization work with multiple external key organizations: NQF, quality alliances, major measure developers and AHRQ. This is especially critical in establishing consensus on measurement policies, as well as coordinating measures databases.
- Conducting continuous refinement of the Measures Management System based on the evolving needs of CMS, customer feedback as well as ongoing changes in the science of quality measurement.
- Serving as an unbiased focal point to facilitate harmonization of different measure sets or to assist in evaluation of different measures for inclusion in a program or initiative.
- Providing subject-matter expertise to the QMIS contractor, ensuring that QMIS meets the needs of CMS, the measure contractors, and the public.
- Continually scanning the measurement environment to ensure CMS is informed of issues related to the quality measures in a timely fashion.
- Soliciting feedback from the measure contractors and CMS as to the success the Measures Manager has had in fulfilling its mission and seeking input on new areas where the Measures Manager can provide support.
- Conducting informational sessions on updates to the Blueprint and participating in informational sessions on updates to QMIS.
- Ensuring that the Blueprint and related Web-based deliverables comply with Section 508.