
Guide for Reading the EHR Incentive Program EP Measures

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1. Introduction

This document provides guidance for understanding and using the electronically specified measures identified as ‘retooled’ measures as well as the retooled measures currently published as Eligible Provider (EP) measures in pdf format.

Collecting and reporting accurate, comparative healthcare performance data is complex and largely a time consuming, manual process. Much of the information required for performance measurement is available in electronic health records (EHRs) but it is not been routinely available for export and use to compute measures. Performance measures most frequently address routinely available data and are therefore often based on claims and sometimes accessible laboratory results and pharmaceutical usage data (clinically enriched measures). Truly accessing the rich clinical data residing in EHRs requires that measures are specified to account for the way data are expressed in EHRs. NQF, through the Health Information Technology Expert Panel (HITEP), established the Quality Data Set (QDS) to enable such expression of data requirements in the context of EHR usage. To further enable electronic measurement, NQF supported the development of an electronic standard based on the Quality Data Set (QDS) known as the eMeasure representation of the Health Quality Measure Format (HQMF). This standard will allow EHR vendors to more directly manage information required for measurement in their products.

The Center for Medicare and Medicaid Services (CMS) has asked NQF to convert, or “retool,” a number of existing NQF-endorsed measures from a paper based format to an electronic eMeasure format so they can be more easily interpreted by EHRs. NQF has worked with the original stewards of these measures to assure the intent and meaning is preserved and to avoid substantive change that would require re-evaluation of evidence and intent. This project was specifically scoped to redefine the measures ‘as is,’ but in the context of EHR data.

Measure retooling consists of measure developers evaluating each selected measure and applying the QDS to each data element. This process includes creating or updating code lists using standard terminologies and applying these code lists to QDS data types. The resulting quality data elements are configured to address the logic and to express the measure algorithm. This process is performed using a ‘prototype’ authoring tool, created by NQF staff for this project. NQF is currently contracting with an external vendor to implement and launch an authoring tool available for use and fully tested in mid 2011. This tool will enable measure developers to directly author measures using the QDS and avoid the need for retooling.

2. Documents you will need

Each measure contains two documents that are necessary to understand the electronic measure. The first document is the measure specification and logic file titled, “NQF_HQMF_HumanReadable_” followed by the National Quality Forum (NQF) endorsed

identifier number (e.g., NQF_HQMF_HumanReadable_0001). The second file is an Excel spreadsheet that accompanies each measure. The spreadsheet is titled “NQF_Retooled_Measure_” followed by the NQF endorsed identifier number.

[eMeasure specification](#) (NQF_HQMF_HumanReadable_xxx.pdf)

This file contains the eMeasure specifications including measure background information, the required data elements, measure logic, and measure calculation instructions. This file is formatted similar to the human readable component of the eMeasure Health Quality Measure Format (HQMF) that will follow.

[eMeasure code lists](#) (NQF_Retooled_Measure_xxx.xls)

This file contains all of the code lists (a synonym for value sets) referenced by all QDS data elements in the eMeasures.

3. Opening the documents

[eMeasure specification](#) (NQF_HQMF_HumanReadable_xxx.pdf)

This file requires Adobe Acrobat Reader®.

[eMeasure code lists](#) (NQF_Retooled_Measure_xxx.xls)

To view the code lists, codes and descriptors, you may open this Excel spreadsheet in any spreadsheet reader that understands Excel, such as Microsoft Excel or Open Office.

4. Reviewing the documents

[eMeasure specification](#) (NQF_HQMF_HumanReadable_xxx.pdf)

The human readable eMeasure contains four main sections: header, population criteria, data criteria, and summary calculation.

Header

The header, (refer to Figure 1 below) which contains pertinent information about the measure) includes the following components:

1. eMeasure name
2. eMeasure Id – an identifier that will be used in the finalized eMeasure HQMF version, currently left pending.
3. Version number

4. Set Id – an identifier that will be used in the finalized eMeasure HQMF version, currently left pending.
5. Available date – a field to be used in the finalized eMeasure HQMF version, currently left pending.
6. Measurement period – the expected range of measurement dates for performance calculation.
7. Measure steward – the organization responsible for the measure content.
8. Endorsed by – the organization that has taken the measure through a consensus process for endorsement.
9. Description – a general description of the measure intent.
10. Measure scoring – an indication as to how the calculation is performed for the measure (e.g., proportion, continuous variable, etc.).
11. Measure type – indication of structural, process or outcome measure.
12. Measure rationale – a general description of the evidence used by the panel of experts that created the measure to develop the logic.
13. Clinical recommendation statement – general advice regarding the measure and its content developed by the panel of experts that created the measure.
14. Definitions – description of individual terms, provided as needed.
15. Stratification – present in some measures to provide notes on how the measure may be stratified, if applicable. Examples of stratification include stratum by age range, gender, and ethnicity (e.g., all patients 18-64 and all patients 65 and above).
16. Guidance – present in some measures to provide notes further explaining the details of the measure. When implementing the measure, refer to this guidance section, where present, for additional information about the data elements, logic and timing of the measure specifications.

Breast Cancer Screening (NQF 0031)

EMeasure Name	Breast Cancer Screening	EMeasure Id	Pending
Version Number	1	Set Id	Pending
Available Date	No information	Measurement Period	January 1, 20xx through December 31, 20xx
Measure Steward	National Committee for Quality Assurance		
Endorsed by	National Quality Forum		
Description	The percentage of women 40–69 years of age who had a mammogram to screen for breast cancer.		
Measure scoring	Proportion		
Measure type	Process		
Rationale	This measure assesses the percentage of women in a specific age demographic who had a mammogram to screen for breast cancer. Breast cancer is the most common cancer diagnosed in women in the United States and is the second leading cause of death from cancer. Awareness of the importance of early detection serves as a significant preventive measure in improving correlated health outcomes. Among women with undetected breast cancer, mammography correctly identifies breast cancer 83%–95% of the time (IOM, 2004). Additionally, mammography screening has been shown to reduce mortality by 20%–30% (IOM 2004). This measure facilitates efforts toward early detection of breast cancer and acceleration of treatment upon diagnosis.		
Clinical Recommendation Statement			
References	Institute of Medicine. Fact Sheet: Mammography Effectiveness. Available from: http://www.iom.edu/en/Reports/2004/Saving-Womens-Lives-Strategies-for-Improving-Breast-Cancer-Detection-and-Diagnosis/Saving-Womens-Lives-Fact-Sheet-Mammography-Effectiveness.aspx . Updated June 2004.		
Definitions			

Figure 1. Sample from eMeasure header containing, eMeasure name, eMeasure Id, version number, set Id, available date, measurement period, measure steward, endorsed by, description, measure scoring, measure type, measure rationale, clinical recommendation statement, definitions, stratification, and guidance (each defined in the text). Note: Stratification and Guidance may not appear in each measure depending upon posting date.

Population criteria

This section contains the four main components of the measure: initial patient population, denominator, numerator, and exclusions (Figure 2). Each component contains measure elements that are joined together with OR, AND, and NOT. Each measure element includes one or more QDS data elements and information about how these each compares with others. For example, in Figure 2, the patient population contains a QDS data element (“Patient characteristic: birthdate”) and additional comparison logic (“>=41 year(s) and <= 68 year(s)”). The Data Criteria section (figure 3) further describes how to calculate age using the birth date *before the “measurement period.”* This should be read as, “all patients with birthdates that start

before measurement period by at least 41 years and less than or equal to 68 years” – i.e. patients ≥ 41 and ≤ 68 years old.

In general, indents are used to show items that are grouped together. Additional logic included in the population criteria are:

- counts of events (e.g. count of procedures ≥ 1),
- first and last occurrences of an event, and
- maximum or minimum results.

For example, the denominator in Figure 2 should be read as “all patients in the initial patient population with an encounter within 2 years of the measurement end date who did NOT have either a) a bilateral mastectomy or b) more than 1 unilateral mastectomies performed on different dates.”

Population criteria

- **Initial Patient Population =**
 - AND: “Patient characteristic: birth date” (age) ≥ 41 AND ≤ 68 years to expect screening for patients within two years after reaching 40 years until 69 years;
- **Denominator =**
 - AND: All patients in the initial population;
 - AND: “Encounter: encounter outpatient” ≤ 2 years before or simultaneously to “measurement end date”;
 - AND NOT:
 - OR: “Procedure performed: bilateral mastectomy grouping”;
 - OR:
 - AND: “Procedure performed: unilateral mastectomy CPT”;
 - AND: “Procedure performed: bilateral mastectomy modifier”;
 - OR: >1 count(s) of “Procedure performed: unilateral mastectomy grouping”;
 - AND NOT: FIRST “Procedure performed: unilateral mastectomy grouping” = SECOND “Procedure performed: unilateral mastectomy grouping”;
- **Numerator =**
 - AND: “Diagnostic study performed: breast cancer screening” ≤ 2 years before or simultaneously to “measurement end date”;
- **Exclusions =**
 - None;

Figure 2. Sample from eMeasure population criteria containing population, denominator, numerator and exclusion criteria and related logic. More specific information about each is included in the text.

Definitions of Population Criteria elements:

- Population – individuals for whom measurement is intended. In measures stratified into different age groups (or based on other stratification criteria), the more than one population will be listed, each referring to one of the stratified groups. Each population is calculated separately. Note, most of the previous discussion suggested patients as the focus of measurement. Some measures are focused on encounters or procedures (e.g., all inpatient discharges, or all hemodialysis treatments).
- Denominator – individuals for whom the expected process and/or outcome should occur (in some cases the denominator is equivalent to the population). The denominator is calculated by adding all that meet denominator criteria.
- Numerator – interventions and/or outcomes expected for the individuals identified in the denominator and population. The performance calculation is the number meeting numerator criteria divided by the final denominator. For measures with multiple numerators calculate each numerator separately within each population.
- Exclusions – individual characteristics that cause the expected process and/or outcome to be inappropriate for an individual specified in the denominator and population. Exclusions are calculated for all patients who meet population and denominator criteria and who do not meet numerator criteria. Most measures with multiple numerators apply the same exclusions to each numerator. Where this is not the case, exclusions are numbered identically to the numerators to which they apply.

Data Criteria (QDS Data Elements)

This section covers QDS data element requirements from the population criteria. Each element is composed of a QDS data type (“Diagnostic study performed,” “Procedure performed,” etc.) and refers to a code list, also called a “value set.” Each code list can be identified by its name.

Data criteria (QDS Data Elements)

<ul style="list-style-type: none"> • Initial Patient Population = <ul style="list-style-type: none"> ○ "Patient characteristic: birth date" using "birth date code list" before the "measurement period"; • Denominator = <ul style="list-style-type: none"> ○ All patients in the initial population; ○ "Encounter: encounter outpatient" using "encounter outpatient code list grouping" before or simultaneously to the "measurement end date"; ○ "Procedure performed: bilateral mastectomy" using "bilateral mastectomy code list grouping" before or simultaneously to the "measurement end date"; ○ "Procedure performed: unilateral mastectomy CPT" using "unilateral mastectomy CPT code list" before or simultaneously to the "measurement end date"; ○ "Procedure performed: bilateral mastectomy modifier code list" using "bilateral mastectomy modifier code list" before or simultaneously to the "measurement end date"; ○ "Procedure performed: unilateral mastectomy" using "unilateral mastectomy code list grouping" before or simultaneously to the "measurement end date"; • Numerator = <ul style="list-style-type: none"> ○ "Diagnostic study performed: breast cancer screening" using "breast cancer screening code list grouping" before or simultaneously to the "measurement end date"; • Exclusions = <ul style="list-style-type: none"> ○ None;
<p><i>Figure 3. Sample from eMeasure data criteria</i> (QDS data elements) including reference to the code lists (value sets) used for each data element as well also some timing relationships among the data elements. More specific information about data criteria is included in the text.</p>

For the individual list of codes that are contained in this code list (also known as a value set), please refer to the eMeasure code list spreadsheet (see below).

Examples: 1) A QDS data element of QDS data type "Diagnostic study **performed**" refers to a code list with a standard category of "Diagnostic study."

2) QDS data element of QDS data type "Procedure **performed**" refers to a code list with a standard category of "Procedure." The QDS data type is used to identify the location of the electronic information for the measure. The code list identifies what codes should be searched within that location.

Summary Calculation

The measure components (initial population, numerator, denominator, and exclusions) are processed according to the algorithm listed in this section to calculate the result of the measure. Please refer to this section for the appropriate calculation instructions.

5. eMeasure code lists (NQF_Retooled_Measure_xxx.xls)

Basics

All codes for all included eMeasures are identified in the following spreadsheet. The spreadsheet also contains 11 tabs, each with information about the individual code lists (value sets). Table 1, below, provides a description of the information in each column.

Column Name	Description
NQF_id	NQF unique measure identification number
measure_name	Measure name (e.g., <i>Appropriate Testing for Children with Pharyngitis</i>)
QDS_id	Unique identification number for QDS data element (the QDS data element is comprised of the standard concept and the QDS data type (described below))
standard_concept	Descriptive name for standard concept, most often defined by a specific code list – the standard concept <i>plus</i> the QDS data type comprise the QDS data element (e.g., <i>diabetes, inhaled corticosteroids, pregnancy test</i>)
standard_category	Descriptive name for the type of information to which the code list applies. The context in which each is used is included in the QDS_data_type column
QDS_data_type	The QDS data type describes ways in which any given standard category is expected to be used in a clinical care process – the QDS data type <i>plus</i> the standard concept comprise the QDS data element (e.g., <i>diagnosis active, medication dispensed, laboratory test result</i>)
standard_concept_id	Unique identification number for standard concept
standard_taxonomy	Medical coding system, or taxonomy, used to describe the standard concept (e.g., <i>ICD-9, RxNorm, LOINC</i>). In some cases the code list (value set) is a ‘superset,’ in that it is a combination of other code lists (value sets) in the spreadsheet. These ‘supersets’ are called <i>GROUPINGS</i> . The taxonomies used are specified with the individual code lists listed in the grouping.
standard_taxonomy_version	The version of the coding system, or taxonomy used to describe the standard concept
standard_code_list	The list of codes included within the code list (value set). If the standard_taxonomy column indicates <i>GROUPING</i> , the identifiers of the individual code lists in the <i>GROUPING</i> are listed in this section rather than individual codes.
QDS_data_type_specific_attributes	Qualifying information / data attributes of the QDS data element that should be captured – all QDS data elements are expected to have an attribute of <i>datetime</i> (e.g., <i>for medications, dose, route, etc. may be required</i>)

Note: Groupings are code lists (value sets) that have nested within them other value sets. Groupings are used for two reasons:

- a) to combine value sets for the same concept, each in different taxonomies (e.g., ICD9, ICD10, SNOMED)
- b) to combine objects that can be used independently but for the specific data element are used together (e.g., encounters may include ‘encounters ambulatory,’ ‘encounters inpatient,’ ‘encounters behavioral health,’ may each be used individually for some elements of a measure while in other measures any encounters in any of those encounter types apply). This type of grouping is a convenience grouping to avoid the need to create an additional value set (e.g., “all encounters”) or to provide more lengthy logic descriptions.