

# HITSP Measurement Criteria Component

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HITSP/C106



Healthcare Information Technology Standards Panel

*Submitted to:*

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*Submitted by:*

**Quality Measures Tiger Team**



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## 1.0 INTRODUCTION

### 1.1 OVERVIEW

This Healthcare Information Technology Standards Panel (HITSP) Measurement Criteria Component supports communication of a formalized quality measure (a.k.a. an "eMeasure"). Clinical concepts (e.g., "atrial fibrillation", "coronary artery disease") and parameters (e.g., "numerator", "denominator") in an eMeasure formally defined in a Health Quality Measures Format (HQMF) to support consistent and unambiguous interpretation. The eMeasure is standardized as a structured document, where one can capture the complete narrative of the measure and a formalized computable representation of statements such as:

- **Denominator** = [1] *>= 2 Face to face visits within measurement period; AND [2] 18+ at start of measurement period; AND [3] confirmed diagnosis of coronary artery disease (based on diagnostic or procedure criteria)*
- **Initial Patient Population** = [1] *Principal inpatient discharge diagnosis of stroke; AND [2] Patient 18+ at admission; AND [3] Length of Stay <= 120 days*

### 1.2 COPYRIGHT PERMISSIONS

#### COPYRIGHT NOTICE

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Certain materials contained in this Interoperability Specification are reproduced from the draft Health Level Seven (HL7) Health Quality Measures Format specification with permission of Health Level Seven, Inc. No part of the material may be copied or reproduced in any form outside of the Interoperability Specification documents, including an electronic retrieval system, or made available on the Internet without the prior written permission of Health Level Seven, Inc. Copies of standards included in this Interoperability Specification may be purchased from the Health Level Seven, Inc. Material drawn from these standards is credited where used.

### 1.3 REFERENCE DOCUMENTS

A list of key reference documents and background material is provided in the table below. HITSP-maintained reference documents can be retrieved from the [HITSP Web Site](#).

**Table 1-1 Reference Documents**

Reference Document	Document Description
<a href="#">HITSP Acronyms List</a>	Lists and defines the acronyms used in this document
<a href="#">HITSP Glossary</a>	Provides definitions for relevant terms used by HITSP documents
<a href="#">TN900 – Security and Privacy</a>	TN900 is a reference document that provides the overall context for use of the HITSP Security and Privacy constructs
<a href="#">TN901 – Clinical Documents</a>	TN901 is a reference document that provides the overall context for use of the HITSP Care Management and Health Records constructs
<a href="#">TN903 – Data Architecture</a>	TN903 is a reference document that provides the overall context for use of the HITSP Data Architecture constructs
<a href="#">TN904 – Harmonization Framework and Exchange Architecture</a>	TN904 is a reference document that provides the overall context for use of the HITSP Harmonization Framework and Exchange Architecture



## 1.4 CONFORMANCE

This section describes the conformance criteria, which are objective statements of requirements that can be used to determine if a specific behavior, function, interface, or code set has been implemented correctly.

### 1.4.1 CONFORMANCE CRITERIA

In order to claim conformance to this construct specification, an implementation must satisfy all the requirements and mandatory statements listed in this specification, the associated HITSP Interoperability Specification or Capability, its associated construct specifications, as well as conformance criteria from the selected base and composite standards. A conformant system must also implement all of the required interfaces within the scope, subset or implementation option that is selected from the associated Interoperability Specification.

Claims of conformance may only be made for the overall HITSP Interoperability Specification or Capability with which this construct is associated.

### 1.4.2 CONFORMANCE SCOPING, SUBSETTING AND OPTIONS

A HITSP Interoperability Specification or Capability must be implemented in its entirety for an implementation to claim conformance to the specification. HITSP may define the permissibility for interface scoping, subsetting or implementation options by which the specification may be implemented in a limited manner. Such scoping, subsetting and options may extend to associated constructs, such as this construct. This construct must implement all requirements within the selected scope, subset or options as defined in the associated Interoperability Specification or Capability to claim conformance.



## 2.0 COMPONENT DEFINITION

### 2.1 CONTEXT OVERVIEW

The HITSP Measurement Criteria Component uses the HL7 Health Quality Measures Format (HQMF) specification to communicate the formal definition of a quality measure.

The purpose of the HQMF standard is to unambiguously represent quality measure specifications, including data elements, logic and definitions in an interoperable format. Quality measure developers will encode their measures in this format so that they can be used by provider organizations to query their Electronic Health Record (EHR) data stores.

#### 2.1.1 COMPONENT DEPENDENCIES

Table 2-1 Component Dependencies

/HITSP Component	Depends On (Name of HITSP Component that it depends on)	Dependency Type (Pre-condition, Post-condition, General)	Purpose (Reason for this dependency)
HITSP/C106 – Measurement Criteria Component (Provisional)	HITSP/C80 – Clinical Document and Message Terminology	General	Defines the terminology constraints for quality measurement data elements
HITSP/C106 – Measurement Criteria Component	HITSP/C154 – Data Dictionary	General	Defines the data dictionary constraints referenced in the domain mapping for quality measurement data elements, and the domain mapping to the HITEP data types for expression of the eMeasure
HITSP/C106 – Measurement Criteria Component	HITSP/C83 – CDA Content Modules	General	Defines the CDA Content Modules to be used in the expression of the eMeasure as specified in HITSP/C154
HITSP/C106 – Measurement Criteria Component	HITSP/C80 – Clinical Document and Message Terminology	General	Defines the CDA Content Modules to be used in the expression of the eMeasure as specified in HITSP/C154

### 2.2 RULES FOR IMPLEMENTING

**Health Quality Measures Format (HQMF):** A standards-based formalism for the representation of quality measures. A quality measure expressed in HQMF format is also referred to as an "eMeasure".

Quality measures exist in a variety of formats today, and the HL7 HQMF standard, while providing formalism for query measure statements, also provides for an incremental approach, where one can:

- Create a minimally conformant eMeasure that simply wraps an existing quality measure in any electronic format within a standardized header (containing standardized metadata).
- Represent the full narrative of a quality measure within the eMeasure XML format.
- Enhance the narrative in the eMeasure XML with a formalized representation of statements such as:
  - Denominator = [1] >= 2 Face to face visits within measurement period; AND [2] 18+ at start of measurement period; AND [3] confirmed diagnosis of coronary artery disease (based on diagnostic or procedure criteria)



- Initial Patient Population = [1] Principal inpatient discharge diagnosis of stroke; AND [2] Patient 18+ at admission; AND [3] Length of Stay <= 120 days

In the context of this Component, eMeasures are to be fully encoded and associated with HITSP value sets. Unstructured narrative eMeasures, while permitted by the HL7 standard, are outside the scope of this Component.

- [MC-1] An eMeasure **SHALL** be encoded and associated with HITSP value sets
- [MC-2] An eMeasure **SHALL** adhere to the HITSP measure parameter definitions where applicable. (see Measure Parameter definitions in Section 2.2.2 Definitions)
- [MC-3] An eMeasure **SHALL** adhere to the HITSP data dictionary and quality domain model mapping

## 2.2.1 DATA MAPPING

*The text for the HL7 HQMF Draft specification begins here:*

An eMeasure is a structured document that has a document header, and can have a structured document body comprised of a number of document sections. Within each document section there is narrative, and there can also be entries that fully encode the narrative statements.

*The text for the HL7 HQMF Draft ends here.*

The Data Mapping tables below address the eMeasure metadata and the eMeasure document body.

### 2.2.1.1 DATA MAPPING FOR EMEASURE METADATA

Note that in the following table, the “Additional Specification” column may have constraints that identify “Limit/Range of values”, Data Source, and/or “Requirements/Pre-conditions”.

**Table 2-2 Data Mapping - eMeasure Metadata**

Constraint ID	HL7 eMeasure Data Element Name	HITSP Data Element Identifier and Name	Optionality	Additional Specification
C106-[DE-metadata-1] <b>MAY</b> be reported as QualityMeasureDocument/verifier/time	Approval Date: Date of approval	N/A	O/N	
C106-[DE-metadata-2] <b>SHALL</b> be reported as <b>SHALL</b> be reported as verifier	Approved By: Person(s) and/or Organization(s) that have endorsed or approved the measure. There can be many approvals – e.g., by the authoring organization, by the National Quality Forum, etc	N/A	R2/Y	
C106-[DE-metadata-3] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute	Care Setting: Location(s) in which care being measured is rendered	N/A	O/Y	
C106-[DE-metadata-4] <b>SHALL</b> be reported as QualityMeasureDocument/custodian	Contact: See Measure Steward	N/A	R/Y	
C106-[DE-metadata-5] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute	Copyright: Copyright information for the measure	N/A	O/Y	





Constraint ID	HL7 eMeasure Data Element Name	HITSP Data Element Identifier and Name	Optionality	Additional Specification
C106-[DE-metadata-6] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Data Aggregation: Indicates, for the measure, how data will be analyzed and statistically reported for quality improvement and public reporting activities. Note: This does not identify the type of data (patient-level or aggregate) that will be transmitted to the measure adopter/warehouse. Examples: "Aggregate rate generated from count data reported as a proportion (for example, rate-based measures which report summary data generated from the number of Cesarean sections as a proportion of deliveries)", "Aggregate rate generated from count data reported as a ratio (e.g., bloodstream infection per 1,000 line days)", "Aggregate measures of central tendency (e.g., continuous variables which report means and medians such as length of stay)"	N/A	O/N	
C106-[DE-metadata-7] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute	Disclaimer: A statement intended to specify or delimit the scope of rights and obligations associated with the measure	N/A	O/N	
C106-[DE-metadata-8] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute	Improvement Notation: Information on whether an increase or decrease in score is the preferred result. This should reflect information on which way is better, an increase or decrease in score	N/A	O/N	
C106-[DE-metadata-9] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute	Keyword: A significant word or words that aid in discoverability	N/A	O/Y	
C106-[DE-metadata-10] <b>SHALL</b> be reported as QualityMeasureDocument/text	Measure Description: Narrative description of the measure	N/A	R/N	
C106-[DE-metadata-11] <b>SHALL</b> be reported as QualityMeasureDocument/author	Measure Developer: Person and/or organization who authored the measure	N/A	R/Y	



Constraint ID	HL7 eMeasure Data Element Name	HITSP Data Element Identifier and Name	Optionality	Additional Specification
C106-[DE-metadata-12] <b>MAY</b> be reported as QualityMeasureDocument/author/responsibleParty/id:	Measure Developer ID: Globally unique identifier of the measure developer	N/A	O/Y	
C106-[DE-metadata-13] <b>MAY</b> be reported as QualityMeasureDocument/effectiveTime:	Measure Effective Time: Time period for which the measure is effective	N/A	O/N	
C106-[DE-metadata-14] <b>SHALL</b> be reported as QualityMeasureDocument/id:	Measure ID: Globally unique measure identifier	N/A	R/N	
C106-[DE-metadata-15] <b>SHALL</b> be reported as QualityMeasureDocument/title:	Measure Name: Title of the quality measure	N/A	R/N	
C106-[DE-metadata-16] <b>MAY</b> be reported as QualityMeasureDocument/componentOf/QualityMeasureSet/id:	Measure Set ID: Globally unique identifier of the measure set that this measure is a part of	N/A	O/N	
C106-[DE-metadata-17] <b>SHALL</b> be reported as QualityMeasureDocument/custodian:	Measure Steward: The custodian of the measure, bearing overall responsibility for the measure, and serving as primary contact for issues or concerns about the measure	N/A	R/N	
C106-[DE-metadata-18] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Measure Scoring: Examples: Proportion, Ratio, Continuous Variable	N/A	O/N	
C106-[DE-metadata-19] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Measure Type: Indicates whether the measure is used to examine a process or an outcome over time. Examples: Process, Outcome	N/A	O/N	
C106-[DE-metadata-21] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Notice of Use: Usage notes	N/A	O/N	
C106-[DE-metadata-22] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/MeasureAttribute :	Rationale: Description of why this measure is important, particularly from a clinical perspective	N/A	O/N	
C106-[DE-metadata-23] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute:	Reference: Bibliographic citations	N/A	O/Y	
C106-[DE-metadata-24] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Risk Adjustment	N/A	O/Y	
C106-[DE-metadata-25] <b>MAY</b> be reported as QualityMeasureDocument/subjectOf/measureAttribute :	Topic Type	N/A	O/N	
QualityMeasureDocument/versionNumber:	Version	N/A	R/N	
QualityMeasureDocument/availabilityTime:	Version Date	N/A	R/N	



Constraint ID	HL7 eMeasure Data Element Name	HITSP Data Element Identifier and Name	Optionality	Additional Specification
QualityMeasureDocument/statusCode:	Version Status	N/A	R/N	

## 2.2.1.2 EMEASURE DOCUMENT SECTIONS

Note that in the following table, the “Additional Constraints” column may have constraints that identify “Limit/Range of values”, Data Source, and/or “Requirements/Pre-conditions”.

**Table 2-3 Data Mapping - eMeasure Metadata**

Constraint ID	HL7 eMeasure Data Element Name	HITSP Data Element Identifier and Name	Optionality	Additional Specification
C106-[DE-DocumentSections-1]-All data criteria used to compute population inclusion <b>SHALL</b> be either included or referenced	Data Criteria section: The Data Criteria section contains criteria used primarily to determine whether or not a given patient is included in a measure's numerator, denominator, etc	N/A	R/N	
C106-[DE-DocumentSections-2]-All Population Criteria <b>SHALL</b> be expressed in terms of HITSP C154 data elements using the domain mapping as specified in HITSP/C154 and the vocabulary as constrained by C80	Population Criteria section: The Population Criteria section is used to formalize a measure's population (e.g. numerator, denominator) parameters	N/A	R/N	
C106-[DE-DocumentSections-3]-All Measure Observations <b>SHALL</b> be expressed in terms of HITSP C154 data elements Modules using the domain mapping as specified in HITSP/C154 as constrained by C80	Measure Observations section: The Measure Observations section defines variables (e.g. time from check in to antibiotic administration) used to score particular aspects of performance	N/A	R2/N	

## 2.2.2 DEFINITIONS

The following key concepts used within this Component are briefly defined here:

### 2.2.2.1 GENERAL DEFINITIONS

**Table 2-4 General Definitions**

Concept	Description
eMeasure	A health quality measure expressed in HQMF format
Health Quality Measures Format (HQMF)	A standards-based formalism for the representation of quality measures. A quality measure expressed in HQMF format is also referred to as an "eMeasure"
Quality Measure	A quantitative tool (for example, rate, ratio, index, percentage) that provides an indication of an organization's performance in relation to a specified process or outcome
Quality Measure Set	A unique grouping of performance measures carefully selected to provide, when viewed together, a robust picture of the care provided in a given area (e.g., cardiovascular care, pregnancy)



### 2.2.2.2 MEASURE PARAMETER DEFINITIONS

**Table 2-5 eMeasure Document Sections**

Concept	Description
Denominator	The lower part of a fraction used to calculate a rate, proportion, or ratio in a Rate-based measure. The Denominator is a subset of the Initial Patient Population, grouped for inclusion in a specific performance measure based on specific criteria (e.g., patient's age, diagnosis, prior MI). Different measures within a measure set may have different Denominators (e.g., measure number 1 Denominator = Initial Patient Population AND Smoker; measure number 2 Denominator = Initial Patient Population AND Atrial Fibrillation). (Can have inclusion and exclusion criteria). (Continuous Variable measures do not have a Denominator, but instead define a Measure Population)
Denominator Exception	Denominator Exceptions are the valid reasons for patients who are included in the denominator population, but for whom a process or outcome of care does not occur. Cases that meet the Denominator criteria and do not meet the Numerator criteria can be counted as Denominator Exceptions if they meet the Denominator Exception criteria. Cases in the Denominator that meet the Numerator criteria are not counted as Denominator Exceptions. Patients may have Denominator Exceptions for medical reasons (e.g., patient has an egg allergy so they did not receive flu vaccine); patient reasons (e.g., patient refused flu vaccine); or system reasons (e.g., patient did not receive flu vaccine due to vaccine shortage). These cases are removed from the denominator for the performance logic, however the logic may indicate the number of patients with valid exceptions for reporting
Initial Patient Population	This identifies the eligible group of patients that the performance measure is designed to address; usually focused on a specific disease process (e.g., coronary artery disease, asthma). Details could include such information as specific age groups, diagnoses, diagnostic and procedure codes, enrollment periods, insurance and health plan groups, etc. For example, a patient aged 18 years and older with a diagnosis of CAD who has at least 2 visits during the measurement period. The Initial Patient Population is the same across all quality measures within a single quality measure set. All patients counted (e.g., as Numerator, as Denominator), are drawn from the Initial Patient Population. (Can have inclusion and exclusion criteria)
Measure Exclusion	Equals Initial Patient Population minus Denominator. Measure Exclusions apply to patients who are included in the Initial Patient Population but who do not meet the measure denominator criteria (e.g., CAD and no prior MI), for an individual measure within that same clinical topic. Measure Exclusions are not considered to be part of a given measure's denominator. They are removed from the eligible population for a measure in order to identify patients who qualify for the denominator
Measure Population	Continuous variable measures do not have a Denominator, but instead define a Measure Population. To be in the measure population, a patient is in the larger Initial Patient Population appropriate to the measure set and is not excluded from the individual measure. (Can have inclusion and exclusion criteria). (Proportion and Ratio measures do not have a Measure Population, but instead define a Denominator)
Numerator	The upper portion of a fraction used to calculate a rate, proportion, or ratio. For a Proportion Measure, the Numerator is a subset of the Denominator that defines the group of patients in the denominator for whom a process or outcome of care occurs (e.g., flu vaccine received)

### 2.2.2.3 QUALITY MEASURE SCORING

**Table 2-6 Quality Measure Scoring**

Concept	Description
Continuous Variable	A measure score in which each individual value for the measure can fall anywhere along a continuous scale (e.g., mean time to thrombolytics which aggregates the time in minutes from a case presenting with chest pain to the time of administration of thrombolytics)
Proportion	A score derived by dividing the number of cases that meet a criterion for quality (the numerator) by the number of eligible cases within a given time frame (the denominator) where the numerator cases are a subset of the denominator cases (e.g., percentage of eligible women with a mammogram performed in the last year)
Ratio	A score that may have a value of zero or greater that is derived by dividing a count of one type of data by a count of another type of data (e.g., the number of patients with central lines who develop infection divided by the number of central line days)



#### 2.2.2.4 QUALITY MEASURE TYPES

**Table 2-7 Quality Measure Types**

Concept	Description
Outcome measure	A measure that indicates the result of the performance (or non-performance) of a function or process
Process measure	A measure which focuses on a process which leads to a certain outcome, meaning that a scientific basis exists for believing that the process, when executed well, will increase the probability of achieving a desired outcome

### 2.3 STANDARDS

#### 2.3.1 REGULATORY GUIDANCE

**Table 2-8 Regulatory Guidance**

Regulation	Description
No applicable standards	

#### 2.3.2 SELECTED STANDARDS

**Table 2-9 Selected Standards**

Standard	Description
Health Level Seven (HL7) eMeasure: Representation of quality measures in the Health Quality Measures Format (HQMF), Release 1 (Draft Standard for Trial Use)	The HL7 HQMF Standard is a formalism for encoding quality measures (aka creating eMeasures). The HL7 HQMF Standard is part of the HL7 Version 3.0 family of standards, based on a Reference Information Model (RIM). Visit <a href="http://www.hl7.org">http://www.hl7.org</a> for more information Publication Pending

#### 2.3.3 INFORMATIVE REFERENCE STANDARDS

**Table 2-10 Informative Reference Standards**

Standard	Description
No applicable informative reference standards	



### 3.0 APPENDIX

The following sections include relevant materials referenced throughout this document.

No additional information at this time.



## 4.0 DOCUMENT UPDATES

The following sections provide the details of updates made to this document.

### 4.1 JUNE 30, 2009

No changes. This is the first published version of the document.

### 4.2 SEPTEMBER 30, 2009

The changes in this cycle address the following comments:

- 7230, 7231, 7237, 7215, 7216, 7217, 7219, 7238, 7422, 7434, 7497, 7498

The full text of the comments along with the Technical Committee's disposition can be reviewed on the [HITSP Public Web Site](#).

### 4.3 NOVEMBER 9, 2009

Component dependency added to reference HITSP/C154 Data Dictionary which defines the data dictionary and domain modeling constraints for quality measurement data elements along with a constraint requiring that an eMeasure adhere to the HITSP Data Dictionary and Quality Domain Model Mapping.

### 4.4 JANUARY 18, 2010

Updated per component dependency addition to reference HITSP/C154 Data Dictionary which defines the data dictionary and domain modeling constraints for quality measurement data elements along with a constraint requiring that an eMeasure adhere to the HITSP Data Dictionary and Quality Domain Model Mapping.

### 4.5 JANUARY 25, 2010

Upon approval by the HITSP Panel on January 25, 2010, this document is now Released for Implementation.

