

The Collaborative for Performance Measure Integration with EHR Systems

A Reference Guide for EHR Vendors

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Overview

The Collaborative for Performance Measure Integration with EHR Systems (“Collaborative”), co-sponsored by the American Medical Association (AMA) and the National Committee for Quality Assurance (NCQA) and Electronic Health Record Association (EHRA) is a group of stakeholders in the physician performance measurement and quality improvement arena who have a shared goal to provide the industry with workable recommendations for performance measure use. The Collaborative’s goals are:

1. To create a standardized way of communicating Performance Measures.
2. To establish standards that permit structured, encoded Performance Measure information to be incorporated into EHR applications while preserving the clinical intent of the Performance Measure.
3. To improve the process of Performance Measure update and maintenance for EHR vendors.

A clinical performance measure is the measurement of an action, process or outcome of clinical care. Performance Measures are derived from clinical guidelines and are designed to determine whether the appropriate care has been provided given a set of clinical criteria and an evidence base. Performance Measures are also often referred to as quality indicators or quality measures. For an example of a Performance Measure, see the first section of Appendix E.

The Collaborative has been working to address Performance Measure functionality and integration with EHR systems (EHRs) and has developed a uniform way for Performance Measures to be expressed. The Health Quality Measures Format (HQMF) creates a standardized way of communicating Performance Measures. It establishes standards that permit structured, encoded Performance Measure information to be incorporated into EHR applications while preserving the clinical intent of the Performance Measure. It also improves the process of Performance Measure updates and maintenance for EHR vendors. HQMF is communicated through the use of the following reference materials:

- Performance Measure Template
- Data Dictionary
- XML Schemas

This Reference Guide describes the elements of HQMF’s reference materials and their intended use, explains the potential nuances specific to these materials, and provides samples of two complete Performance Measure specifications. The complete Performance Measure specification consists of the 3 documents that will be available to EHRs vendors:

- Performance Measure Description
- Performance Measure in Template
- Performance Measure in XML

Reference materials and samples of two complete Performance Measure specifications can be found in Appendix E and F.

Reference Materials

General Reference Materials

1. Performance Measure Template

The Performance Measure Template defines the general structure and specific elements of Performance Measures that must be conveyed by measure development organizations to EHRs vendors. The element definitions contain the logic and variables to be populated from Performance Measure data. The Performance Measures are prescribed in this format to provide a consistent non-technical representation of the details of the Performance Measure.

2. Data Dictionary

The Data Dictionary is a description of the data elements in both the Performance Measure Template and the XML Schemas.

Technical Reference Materials

3. XML Schemas

The XML Schemas are the standard set of rules that are used to express the Performance Measures as XML documents. The Performance Measures are translated into XML documents to provide a technical representation for the EHR Vendor. The Performance Measures' calculations rarely change; however, the codes applicable to the calculations change frequently. Thus, two XML Schemas were developed to minimize the necessity to re-code or update software. The Schemas developed are as follows:

- a. Measure XSD

The Measure XSD defines the Performance Measure XML documents in terms of constraints upon what elements and attributes may appear, their relationship to one another and what types of data may be in them. The Measure XSD elements apply to the Performance Measures' data and calculation information.

- b. Codes XSD

The Codes XSD defines the Performance Measure Codes XML documents in terms of constraints upon what elements and attributes may appear, their relationship to each other and what types of data may be contained in them. The Codes XSD elements apply to the Performance Measures' code groups contained in the algorithms.

Thus, to obtain all XML-translated Performance Measure information, you must use both the Measure and Codes XML files.

Performance Measure Specifications

Each Performance Measure is communicated through a complete Performance Measure Specification which includes the following:

- Performance Measure Description
- Performance Measure in Template
- Performance Measures in XML

Samples of two Performance Measure Specifications can be found Appendices E and F.

Performance Measure Description

The Performance Measure Description is a document written for general audiences. It describes the intent of the performance measure, including the patient population, the calculation of the measure and the relevant clinical information. This is in a format determined by the measure development organization.

Performance Measure in Template

The Performance Measure is translated into the Performance Measure Template. This allows all Performance Measures, regardless of source, topic or type, to be represented in a standard non-technical format.

Performance Measure in XML

The Performance Measure is translated into XML Documents. These documents are coding language-agnostic, machine-readable presentation of the Performance Measure. Essentially, the only difference between the Performance Measure and the XML translated Performance Measure is the format in which it is written. However, EHRs vendors can use the XML translated Performance Measure more easily to incorporate and update data into their software.

Each Performance Measure is encoded and stored in XML format. There are two XML documents for each Performance Measure that translate the information into XML:

Measure XML

The Measure XML document contains the data and measure calculation information from the Performance Measure.

Codes XML

Each Performance Measure calculation contains a number of codes to describe a procedure, a type of office visit (Encounter Code), a diagnosis, a drug type, and other types of events or entities. The Codes XML defines the code groups in the Measure XML.

Thus, in order to obtain all XML translated Performance Measure information you must use both the Measure XML file and the Codes XML file.

Transmission/Release

The Performance Measure Specifications will be available in electronic form on the American Medical Association (AMA) Web site. A summary of changes will be distributed through release notes on a recurring cycle.

Reference Materials

General Reference Materials

1. Performance Measure Template

The Performance Measure Template provides a standard way to represent Performance Measures and their calculations. The Performance Measure Template is an all-encompassing, non-technical representation of performance measures. The template is flexible and handles simple or complicated measures, allows for nested logic and links each data element with its properties. Because it is generic, the Template can be a shared model among all performance measures and is intended to be used by all performance measure developers.

The Performance Measure Template¹ has three key sections:

Section I: Measure General Information - contains the data and calculation information about the performance measure.

Section II: Measure Information - contains the algorithms and details about the following Information Types:

- a) **Patient Population**
This identifies the general group of patients that the performance measure is designed to address; usually focused on a specific disease process (e.g., coronary artery disease, asthma). For example, a patient aged 18 years and older with a diagnosis of CAD who has at least 2 visits during the measurement period
- b) **Measure Exclusions**
Measure Exclusions apply to patients who are included in the eligible population for a given clinical topic 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.
- c) **Denominator**
This defines the specific group of patients for inclusion in a specific performance measure based on specific criteria (e.g., patient's age, diagnosis, prior MI).
- d) **Numerator**
This defines the group of patients in the denominator for whom a process or outcome of care occurs (e.g., flu vaccine received).
- e) **Denominator Exceptions**
These 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. 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 population for the performance calculation, however the number of patients with valid exceptions can be calculated and reported. This group

¹ For the complete Performance Measure Template please see Appendix A. Additionally, the Data Dictionary in Appendix B contains the complete definition of the fields in the Performance Measure Template.

of patients constitutes the Denominator Exception reporting population – patients for whom the numerator was not achieved and a valid Denominator Exception was reported.

Each Information Type is broken down into **Logical Expressions**, which define the performance measure computations. Within the Logical Expressions are **Logical Elements**, which contain the pertinent details for the Information Type calculation. Logical Expressions are connected to the next sequential logical expression with a Logical Expression Logical Operator, either an “AND”, “OR”, “AND NOT” or “OR NOT.” Similarly, Logical Elements are connected to the next sequential Logical Element with a Logical Element Logical Operator which is either an “AND”, “OR”, “AND NOT” or “OR NOT.” The number of Logical Expressions and Logical Elements are unbounded; however, the quantity is stated in the Number of Logical Expressions and Number of Logical Elements data elements.

Section III: Code Information - contains all the data information pertaining to the codes used in the Patient Population, Measure Exclusions, Numerator, Denominator and Denominator Exceptions Information Types.

2. Data Dictionary

The Data Dictionary contains definitions and representations of data elements from both the Performance Measure Template and the XML Schemas. There is one data dictionary for all performance measures. The Data Dictionary provides the following information for each data element:

- **Performance Measure Template Data Element** - the name of the component as it is represented in the Performance Measure Template.
- **XML Data Element** - the name of the component as it is represented in the Measure and Codes XML Schemas.
- **Description** - description of the data element.
- **Data Type** - the classification identifying one of various types of data (e.g., string, integer or Boolean.)
- **Format** - the format of the data type.
- **Sample Values** - example values for the XML Data Element.
- **Required** - indicates whether or not the data element is required or optional for each performance measure.

Example:

Performance Measure Template Data Element	XML Data Element	Description	Data Type	Format	Sample Values	Required
Code Group	CodeGroup	The code group number used to represent a grouping of one or more codes to be used in the LogicalElement.	String	xx.xxxxxx (Measure Developer ID.Sequence #)	02.001003	Yes

For more information about the Data Dictionary, see Appendix B.

Technical Reference Materials

3. XML Schemas

As mentioned earlier, information for each Performance Measure is defined in two XML Schemas: 1) the Measure XSD containing the Performance Measure data and calculation information, and 2) the Codes XSD containing the code group's data. These two files contain the underlying schemas for the Performance Measures and should be used across all Performance Measure XML documents.

XML was adopted as the encoding format because it was requested by a number of EHR vendors and because it supports the creation of customized tags, enabling the definition, transmission, validation and interpretation of data between various applications and performance measure development organizations. XML-translated Performance Measures are coding language-agnostic and a machine-readable presentation of the textual Performance Measure. EHRs can use the XML-translated Performance Measure to incorporate and update data into their software. For the complete XML Schemas, see Appendix C and D. For samples of two Performance Measures applied to the XML Schemas, refer to Appendix E and F.

3a. Measure XSD

Measure Performance Calculations

Measure development organization have different methods for calculating performance, however, during the development of the XML Schemas, consensus was reached regarding the data elements needed for calculation. The data elements needed for the calculations are contained in the Information Types with the specified Logical Expressions and Logical Elements.

The basic logic for measure calculation is:

$$\text{Numerator (N) / Denominator (D) = \%}$$

However, to get to N and D there are a few steps that must be taken.

Step 1 – Find the patients who meet the Patient Population criteria (pp)

Step 2 – Exclude any patients who meet the Measure Exclusion (e) criteria

Step 3 – Find the patients who qualify for the Denominator (d):

- From the patients within the Patient Population criteria (pp) who were not excluded (e) from the measure, select those people who meet Denominator selection criteria.

Step 4 – Find the patients who qualify for the Numerator (n):

- From the patients within the Patient Population criteria (pp) who were not excluded (e) from the measure, and who met the Denominator (d) criteria, select those people who meet Numerator selection criteria.
- Validate that numerator <= denominator

Step 5 – From the patients who did not meet the Numerator criteria, determine if the patient meets any criteria for the Denominator Exception (de). If they meet any criteria, they should be removed from the Denominator. As a point of reference, these cases are removed from the denominator population for the

performance calculation, however the number of patients with valid exceptions can be calculated and reported.

It should be noted that not all measures in XML will have all of the Information Types. The only required Information Types are the numerator and denominator. If an Information Type is not present it is eliminated from calculation.

Example:

CAD-3: Beta Blocker Therapy

Measurement Period: 12 months

Patient Population:

- Two face to face office visits
- Aged 18 years of age and older at the beginning of the measurement period
- Documented diagnosis of CAD

Denominator: Prior Myocardial Infarction at any time

Numerator: Patients prescribed Beta Blocker Therapy

Denominator Exceptions: Medical, Patient or System reason only if Beta Blocker was not prescribed

Sample Population: (please note that the data for visits, diagnosis, prior Myocardial Infarction, therapy prescribed and exclusion would be encoded in the EHR system, the data presented is for example purposes)

Patient ID	Number of Visits	Age at Beginning of Measurement Period	Diagnosis	Prior MI	Prescribed BB Therapy	Reason for not Prescribing
1	2	36	CAD	YES	NO	
2	3	38	CAD	YES	YES	
3	4	54	CAD	YES	NO	Patient
4	1	72	CAD	YES	YES	
5	1	56	CAD	NO	NO	
6	3	69	CAD	YES	YES	Patient
7	2	42	CAD and Diabetes	YES	YES	
8	1	53	CAD	NO	NO	
9	0	35	Diabetes	NO	NO	
10	2	66	CAD	YES	YES	

Step 1: Find the patients who meet the Patient Population criteria (pp)

Results:

Patient ID	Number of Visits	Age at Beginning of Measurement Period	Diagnosis	Prior MI	Prescribed BB Therapy	Reason for not Prescribing
1	2	36	CAD	YES	NO	
2	3	38	CAD	YES	YES	
3	4	54	CAD	YES	NO	Patient
6	3	69	CAD	YES	YES	Patient
7	2	42	CAD and Diabetes	YES	YES	
10	2	66	CAD	YES	YES	

Note: Patients 4, 5, 8 and 9 did not have the required number of visits.

Step 2: There are no Measure Exclusions (e) defined for the measure

Step 3: Find the patients who meet the Denominator (d) criteria:

Results

Patient ID	Number of Visits	Age at Beginning of Measurement Period	Diagnosis	Prior MI	Prescribed BB Therapy	Reason for not Prescribing
1	2	36	CAD	YES	NO	
2	3	38	CAD	YES	YES	
3	4	54	CAD	YES	NO	Patient
6	3	69	CAD	YES	YES	Patient
7	2	42	CAD and Diabetes	YES	YES	
10	2	66	CAD	YES	YES	

Note: All 6 patients meet the criteria. (d = 6)

Step 4: Find the patients who meet the Numerator (n) criteria

Patient ID	Number of Visits	Age at Beginning of Measurement Period	Diagnosis	Prior MI	Prescribed BB Therapy	Reason for not Prescribing
2	3	38	CAD	YES	YES	
6	3	69	CAD	YES	YES	Patient
7	2	42	CAD and Diabetes	YES	YES	
10	2	66	CAD	YES	YES	

Note: Patients 1 and 3 did not receive Beta Blocker therapy, so they do not meet the Numerator criteria (n = 4)

Step 5: Find the patients who have a valid Denominator Exception (de)

Patient ID	Number of Visits	Age at Beginning of Measurement Period	Diagnosis	Prior MI	Prescribed BB Therapy	Reason for not Prescribing
3	4	54	CAD	YES	NO	Patient

Note: Patient 3 has a valid Denominator Exception reason, so they are removed from the denominator (d = 5)

Results of the performance calculations:

Numerator (n) = 4

Denominator (d) = 5

$n / d = 80\%$

Optional and Required Data Elements

Performance measures have information that is both required and optional. The XML Schemas support both types of data. Consider the following XML snippet taken directly from the Measure.xsd file.

```
<xs:element name="Measure">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="MeasureDeveloper" type="xs:string"/>
      <xs:element name="MeasureDeveloperID" type="xs:string"/>
      <xs:element name="MeasureRegistryID" type="xs:string"/>
      <xs:element name="DateSent" type="xs:date" minOccurs="0"/>
      <xs:element name="ApprovedBy" type="xs:string" minOccurs="0"/>
      <xs:element name="DateApproved" type="xs:date" minOccurs="0"/>
      <xs:element name="EndorsedBy" type="xs:string" minOccurs="0"/>
      <xs:element name="EndorsedDate" type="xs:date" minOccurs="0"/>
      <xs:element name="Rationale" type="xs:string" minOccurs="0"/>
      <xs:element name="ImprovementNotation" type="xs:string" minOccurs="0"/>
      <xs:element name="MeasureStatement" type="xs:string"/>
      <xs:element name="MeasurementUnit" type="xs:string"/>
      <xs:element name="MeasurementLength" type="xs:unsignedByte"
minOccurs="0"/>
      <xs:element name="Copyright" type="xs:string"/>
      <xs:element name="Disclaimer" type="xs:string" minOccurs="0"/>
      <xs:element name="NoticeOfUse" type="xs:string" minOccurs="0"/>
    
  
</xs:element>
```

In the XML Schema optional elements have a *minOccurs="0"* attribute. Technically, as far as the measure schema is concerned, it does not make a difference whether or not such elements appear with no values or do not appear at all. However, in Measure XML documents, optional elements or attributes with no values are simply not displayed.

Correspondingly, highly pertinent information about the performance measure is marked “required.” The XML attributes themselves have another attribute called “use,” which renders the XML attribute required when its value is set to “required.” In the above snippet, the four attributes: ID, Name, Version and VersionDate are all required.

As previously described, Performance Measures contain five unique information types: Patient Population, Measure Exclusions, Denominator, Numerator, Denominator Exceptions. These information types usually appear in the measure XML document in the same order listed above but, technically, can be in any order. The two required information types for each measure are the Numerator and Denominator. The XML Schema snippet below defines the Information Type element in the measure.

```
<xs:element name="Information" maxOccurs="unbounded">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Statement" type="xs:string" minOccurs="0"/>
      <xs:element name="MinAge" type="xs:unsignedByte" minOccurs="0"/>
      <xs:element name="MaxAge" type="xs:unsignedByte" minOccurs="0"/>
      <xs:element name="AgeUnit" type="xs:string" minOccurs="0"/>
      <xs:element name="AgeType" type="xs:string" minOccurs="0"/>
      <xs:element name="MinObservationValue" type="xs:unsignedByte" minOccurs="0"/>
      <xs:element name="MaxObservationValue" type="xs:unsignedByte" minOccurs="0"/>
      <xs:element name="ObservationValueUnit" type="xs:string" minOccurs="0"/>
      <xs:element name="InterperationCode" type="xs:string" minOccurs="0"/>
      <xs:element name="ObservationCalcPeriod" type="xs:string" maxOccurs="0"/>
      <xs:element name="Sex" type="xs:string" minOccurs="0"/>
      <xs:element name="CalculationDescription" type="xs:string" minOccurs="0"/>
      <xs:element name="MeasureCalculationDate" type="xs:string" minOccurs="0"/>
      <xs:element name="SocialBehavior" type="xs:string" minOccurs="0"/>
      <xs:element name="SocialBehaviorStatus" type="xs:string" minOccurs="0"/>
      <xs:element name="Death" type="xs:string" minOccurs="0"/>
      <xs:element name="CurrentLocation" type="xs:string" minOccurs="0"/>
      <xs:element name="SourceLocation" type="xs:string" minOccurs="0"/>
      <xs:element name="TargetLocation" type="xs:string" minOccurs="0"/>
      <xs:element name="NumberOfLogicalExpressions" type="xs:int"/>
      <xs:element name="LogicalExpression" maxOccurs="unbounded">
        <xs:sequence>
          <xs:complexType>
            <xs:element>
```

As you can see, most fields in the Information Type element are optional because all four of the information types do not have these fields.

Namespaces

Default namespace is assumed for both Measure and Codes XML documents. Thus, no namespaces are specified in any of these documents. If necessary, the developer using these measures may add any XML namespaces required to integrate the XML Schemas with the target development platform.

Spaces and line feeds

Spaces and line feeds are preserved in XML documents. For example, Copyright, Disclaimer and NoticeOfUse elements contain the raw text of that field. Therefore, the Copyright element may contain numerous lines to account for all the various copyright statements in the measure.

Performance Measurement Period

The Performance Measurement Period is usually specified using two fields, MeasurementUnit and MeasurementLength. When the MeasureStatement makes a specific reference to the length of measure being one year or a 12-month period, the MeasurementUnit would be “Months” and MeasurementLength would be “12”.

Measurement Calculation Date Represented in XML

Each Information Type contains an optional field called MeasureCalculationDate, designed to represent the date or date range used for measure calculations. However, its specifics are not always stated in the Performance Measure; thus, Measure Calculation Date is an open-string field. For instance, in the Patient Population section of the CAD1 measure, MeasureCalculationDate is set to “Measure Start Date.” In another measure, however, the measure calculation date may be stated as a relative date such as “December 31 of the measurement year,” in which case, “December 31 of the measurement year” is assigned to the Measure Calculation Date element.

LogicalExpressions and LogicalElements

LogicalExpression and its child element, LogicalElement, make up the majority of the content in an Information Type element and are responsible for encoding the measure algorithm in XML. Each Information Type contains a required field called NumberOfLogicalExpressions, stating the number of LogicalExpressions in that Information Type element. There is no limit to how many LogicalExpressions can be inside an Information Type element. Looking at the XML Schema for the LogicalExpression element, you can see that it only has two elements, NumberOfLogicalElements and LogicalElement, along with a LogicalOperator attribute.

```
<xs:element name="LogicalExpression" maxOccurs="unbounded" >
  <xs:complexType>
    <xs:sequence>
      <xs:element name="NumberOfLogicalElements" type="xs:int"/>
      <xs:element name="LogicalElement" maxOccurs="unbounded">
    </xs:element>
    </xs:sequence>
    <xs:attribute name="LogicalOperator" type="xs:string" use="optional" />
  </xs:complexType>
</xs:element>
```

As the name suggests, the NumberOfLogicalElements reflects the number of LogicalElement nodes that appear within the current LogicalExpression. The LogicalOperator attribute is simply the logical connector between LogicalExpression nodes and can only contain “AND” or “OR” or “ANDNOT” or “ORNOT” as its values. It is listed as optional because the last LogicalExpression does not contain any logical operators since there are no additional nodes to which it can logically connect. With that in mind, let’s examine the XML Schema for the LogicalElement elements.

```
<xs:element name="LogicalElement" maxOccurs="unbounded">
  <xs:complexType>
    <xs:sequence>
```

```

<xs:element name="CodeGroup">
  <xs:complexType>
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute name="Description" type="xs:string"
          use="required" />
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:element name="CodeType" type="xs:string" />
<xs:element name="OccurrenceMin" type="xs:int" minOccurs="0"/>
<xs:element name="OccurrenceMax" type="xs:int" minOccurs="0"/>
<xs:element name="CodePeriodUnit" type="xs:string" minOccurs="0"/>
<xs:element name="CodePeriodLength" type="xs:int" minOccurs="0"/>
</xs:sequence>
<xs:attribute name="LogicalOperator" type="xs:string" use="optional" />
</xs:complexType>
</xs:element>

```

LogicalElements contain the logical grouping of codes and conditions stated in the measure document, and there is no limit to how many can be within a LogicalExpression node. In addition to specific code groups and a code type, there are also fields in a LogicalElement to store subsequent details about the specified condition of the code group.

OccurrenceMin and OccurrenceMax specify ranges, while CodePeriodUnit and CodePeriodLength elements contain any time period provisions mentioned in the original measure document pertaining to the code. For instance, if the measure limits the validity of the LogicalElement to “Measurement year or prior year,” this text could be set as the value of the [CodePeriodUnit](#) node with no additional value required for the CodePeriodLength node.

The key point is to know when a LogicalExpression versus a LogicalElement is used for conditions stated in the Performance Measure. Since LogicalExpression elements are logical groupings of one or more LogicalElements, it is safe to assume that parentheses are a good indicator for LogicalExpressions. Consider the following expression:

(A and B and C) OR (D and E) OR F

In this case, three LogicalExpressions are required to properly group the LogicalElements, which here are symbolized by letters. For the purposes of this sample, assume that each of those LogicalElements represented by letters contains its own sequentially numbered CodeGroupNumber and that code types are either ICD9 or CPT. With that assumption, the following XML represents the above expression in terms of LogicalExpression and LogicalElement nodes.

```

<LogicalExpression LogicalOperator="OR">
  <NumberOfLogicalElements>3</NumberOfLogicalElements>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="A">MeasureDeveloperID.Seq</CodeGroup>
    <CodeType>ICD9</CodeType>
  </LogicalElement>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="B">MeasureDeveloperID.Seq</CodeGroup>
    <CodeType>CPT</CodeType>
  </LogicalElement>
  <CodeGroup Description="C">MeasureDeveloperID.Seq</CodeGroup>

```

```

        <CodeType>CPT</CodeType>
    </LogicalElement>
</LogicalExpression>
<LogicalExpression LogicalOperator="OR">
    <NumberOfLogicalElements>2</NumberOfLogicalElements>
    <LogicalElement LogicalOperator="AND">
        <CodeGroup Description="D">MeasureDeveloperID.Seq</CodeGroup>
        <CodeType>ICD9</CodeType>
    </LogicalElement>
    <LogicalElement>
        <CodeGroup Description="E">MeasureDeveloperID.Seq</CodeGroup>
        <CodeType>CPT</CodeType>
    </LogicalElement>
    </LogicalExpression>
</LogicalExpression>
    <NumberOfLogicalElements>1</NumberOfLogicalElements>
    <LogicalElement>
        <CodeGroup Description="F">MeasureDeveloperID.Seq</CodeGroup>
        <CodeType>ICD9</CodeType>
    </LogicalElement>
</LogicalExpression>

```

Once again, the last LogicalElements in a LogicalExpression node does not have LogicalOperator attributes since there are no additional nodes to connect with at that level. Additionally, there is the fact that sequential order of the LogicalExpressions is assumed by default although in accordance with XML specifications, technically, no heirarchy is assumed between individual LogicalElement or LogicalExpression elements.

Encoding ranges

Encoding ranges in the Measure XML document is common. Often the text of the measure contains conditions with X (“X” being a number) or more occurrences of a certain diagnosis or, at least, X number of occurrences of a certain event such as office visits or lab values.

The PatientPopulation information type most often has age ranges. To address the expression of ages, the Information element has support for three optional fields: MinAge, MaxAge, and AgeUnit. These fields represent the lower and upper bound of the specified age range with AgeUnit representing the unit of time described in the age fields.

For instance, the CAD1 measure (CAD1 is the measure ID for the Coronary Artery Disease measure) states the required age of patients to be 18 years or older as one of the selection criteria. In this case, MinAge would be “18” with no MaxAge element defined, and the AgeUnit sets to “Years.” When describing the age of infants or children whose ages are not calculated in years, “Weeks” or “Months” can be used as AgeUnit.

To express non-age related ranges, two optional elements are provided, OccurrenceMin and OccurrenceMax. These two fields reside in LogicalElements and are always accompanied with a reference to a code group. To illustrate clearly the proper use of these two elements, assume the event described in a code group is “Office Visits.” The table below lists some common range scenarios that may be specified in a measure and how they can be expressed in the Measure XML file using the OccurrenceMin and OccurrenceMax elements. Once again, keep in mind that office visit types, just like any other entity, is defined using code groups in LogicalElements.

Description	XML
At least one office visit	<OccurrenceMin>1</OccurrenceMin>
One office visit	<OccurrenceMin>1</OccurrenceMin> <OccurrenceMax>1</OccurrenceMax>
Between two and five office visit	<OccurrenceMin>2</OccurrenceMin> <OccurrenceMax>5</OccurrenceMax>
Two or more office visits	<OccurrenceMin>2</OccurrenceMin>
No more than four office visits	<OccurrenceMax>4</OccurrenceMax>
No office visits	<OccurrenceMin>0</OccurrenceMin>

A key point here is that in cases where the upper or the lower bound of the range is not defined, there is no need to have the <OccurrenceMin> or <OccurrenceMax> empty elements. Lastly, when the measure specifically states the absence of an event such as an office visit, the <OccurrenceMin> element for that code group should simply contain 0. One such example is in the Diabetes 1 measure, where the exclusionary conditions make reference to no office visits in various settings (e.g., Inpatient, Outpatient). In this case, numerous LogicalElements are created to account for the various office visit settings, with each containing 0 for the <OccurrenceMin> element as shown in the XML snippet below:

```
<LogicalExpression>
  <NumberOfLogicalElements>5</NumberOfLogicalElements>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="Outpatient">01.000100</CodeGroup>
    <CodeType>CPT</CodeType>
    <OccurrenceMin>0</OccurrenceMin>
    <CodePeriodUnit>Measurement year or prior year</CodePeriodUnit>
  </LogicalElement>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="Outpatient">01.000102</CodeGroup>
    <CodeType>UB-92</CodeType>
    <OccurrenceMin>0</OccurrenceMin>
    <CodePeriodUnit>Measurement year or prior year</CodePeriodUnit>
  </LogicalElement>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="Acute inpatient">01.000103</CodeGroup>
    <CodeType>UB-92</CodeType>
    <OccurrenceMin>0</OccurrenceMin>
    <CodePeriodUnit>Measurement year or prior year</CodePeriodUnit>
  </LogicalElement>
  <LogicalElement LogicalOperator="AND">
    <CodeGroup Description="Emergency department">01.000105</CodeGroup>
    <CodeType>CPT</CodeType>
    <OccurrenceMin>0</OccurrenceMin>
    <CodePeriodUnit>Measurement year or prior year</CodePeriodUnit>
  </LogicalElement>
  <LogicalElement>
    <CodeGroup Description="Emergency department">01.000109</CodeGroup>
```

```
<CodeType>UB-92</CodeType>
<OccurrenceMin>0</OccurrenceMin>
<CodePeriodUnit>Measurement year or prior year</CodePeriodUnit>
</LogicalElement>
</LogicalExpression>
```

3b. Codes XSD

Each measure contains a number of codes to describe a procedure, a type of office visit (Encounter Code), a diagnosis, or a drug type, among other types of events or entities. These codes are grouped into sets of “CodeGroup” elements based on their logical grouping and their use in the measure.

The complete list of applicable codes in CodeGroups is stored in the Codes XML file while the references to CodeGroup elements used by the measure are stored in the measure XML file itself.

Each Measure XML document may contain dozens or more references to CodeGroups. To illustrate this point, consider the following example:

In the Performance Measure Document, a condition is stated for a Patient who has a documented diagnosis of CAD (Coronary Artery Disease) with the list of the diagnosis codes below.

DX CODE (I9)	PROC CODE (C4)
414.00-414.07, 414.8, 414.9,	92980-92982, 92984,
410.00-410.92, 412,	92995, 92996, 33140,
411.0-411.89, 413.0-413.9	33510-33514, 33516-33519,
V45.81, V45.82	33521-33523, 33533-33536

The table includes two groups of codes: 1) International Classification of Diseases, 9th revision (ICD9) Diagnoses and 2) Current Procedural Terminology (CPT®) Procedure codes. So despite the fact that these codes contain the same description and are used in the measure to identify patients with a single diagnosis, each set has a different type. Since the Measure and Codes XML files CodeGroup elements contain only one code type, the above table will result in two CodeGroup elements in the following .xml file.

```
<CodeGroup CodeTypeVersion="2006" Description="DX CODE"
CodeGroupNumber="02.000001">
  <Code CodeType="ICD9">414.00 </Code>
  .
  .
  <Code CodeType="ICD9">V45.82 </Code>
</CodeGroup>
<CodeGroup CodeTypeVersion="2006" Description="PROC CODE"
CodeGroupNumber="02.000003">
  <Code CodeType="CPT">92980 </Code>
  .
  .
  <Code CodeType="CPT">33536 </Code>
</CodeGroup>
```

For the sake of brevity, the entire list of codes is not shown. A CodeGroup element has three attributes:

- CodeTypeVersion - contains the version information of the codes.

- Description - brief description used in the original measure document.
- CodeGroupNumber - the reference number that acts as a unique identifier for this code group and is used in the Measure XML document.

The CodeGroupNumber is assigned mainly based on the sequential appearance of the code groups in the original measure document. So, CodeGroupNumbers CG1 and CG2 are the first code groups listed in the measure document.

With all codes stored in the appropriate code groups in the Codes XML document, the Measure XML document can make references to code groups as needed by using `<CodeGroup>` elements. Each CodeGroup element contains a description attribute, which is the same description as the corresponding CodeGroup in the Codes XML file. The XML code snippet shows two LogicalElements making references to code groups with CodeGroupNumber CG2 and CG3.

```
<LogicalElement LogicalOperator="OR">
  <CodeGroup Description="DX CODE">02.000001</CodeGroup>
  <CodeType>ICD9</CodeType>
</LogicalElement>
<LogicalElement>
  <CodeGroup Description="PROC CODE">02.000003</CodeGroup>
  <CodeType>CPT</CodeType>
</LogicalElement>
```

Within the CodeGroup element, the individual codes are listed as `<Code>` elements with an attribute called CodeType, which, as the name suggests, describes the code type of that particular code. The values of the code groups have a prefix referring to the Measure Development Organization which is used in combination with a sequence number to create a unique global identifier for the code groups.

For the complete Measure and Codes XSD, see Appendix C and D.

Appendices

Appendix A – Performance Measure Template

Appendix B – Data Dictionary

Appendix C – Measure XSD

Appendix D – Codes XSD

Appendix E – Sample Performance Measure – CAD 1

Appendix F – Sample Performance Measure – Diabetes 1

Appendix A: Performance Measure Template

Performance Measure Template

Frequently Asked Questions

What is the purpose of the Performance Measure Template?

A Performance Measure Template is intended to provide a standard, comparable way for measure development organizations to logically represent performance measures. This Performance Measure Template should make understanding performance measures easier for EHR vendors and other consumers of performance measure specifications.

How is the Performance Measure Template different from the Data Dictionary?

The data dictionary defines each of the components within the measure specification that must be conveyed by the measure development organization to the vendor of an EHR system. The Performance Measure Template takes those data elements identified in the import construct and represents them in a standard way that accurately shows the calculation of the measure (including the logic between measure components).

Why is a Performance Measure Template needed?

Performance measures can be described as complex expressions, each containing a number of computations that must be met in order to reach the final answer. For example, in order to determine whether a patient meets the denominator criteria, the equation may look like one of the following:

Example 1 - $(a + b)$ OR (c)

Example 2 - $(a + b + c)$ OR $(a + b + d)$ is equivalent to $(a + b)$ and $(c \text{ or } d)$

Because the expression varies based on a particular measure's requirements, creating a model that can generally represent all measures should reduce the variability in measure specification layout and representation. This will enable EHR vendors to consume the specifications in a uniform manner.

What are we presenting in this document?

This document contains a proposed Performance Measure Template for quality measures. This must be evaluated and verified to ensure accuracy and ease of use for both measure developers and EHR vendors

Performance Measure Template

Section I. – – **Measure General Information** - contains general information about the measure

- Measure ID, Registry ID (namespace)
- Measure name
- Version
- Version date
- Topic type
- Measure developer
- Measure developer ID
- Date sent (date it was sent by the measure developer, not date sent to the vendor)
- Approved by
- Date approved
- Endorsed By
- Endorsed Date
- Rationale
- Improvement notation (should reflect information on which way is better, an increase or decrease in score)
- Measure statement- summary statement of measure
- Measurement unit

- Measurement length
- Calculation Description
- Copyright
- Disclaimer
- Notice of Use

Section II. – **Measure Information** – contains all the logic and codified information about the Patient Population, Measure Exclusions, Denominator, Numerator and Denominator Exceptions for the measure.

Information Type – this section contain detailed information related to each of the calculations. Each information type is expressed separately and has the following format:

- Statement (text description of the patient population)
- Minimum Age
- Maximum Age
- Age Unit -(such as years, days, months, etc)
- Age Type -(such as Gestational or Birth)
- Observation value min
- Observation value max
- Observation value Units - as defined by UCUM (values)
- Interpretation Code- Abnormal, Normal, Moderate, Severe (text)
- Observation Calculation Period- during the measurement period, prior to the measurement period, most recent relative ..., average (number of averages)
- Sex – Male or Female or Unknown
- Calculation Description
- Information Type calculation date
- Death -True or Null
- Location- Current
- Location Source
- Location Target
- Social Behavior – Smokes, Drinks Alcohol
- Social Behavior Status- Current, past, none
- Number of Logical Expressions within the section for the specific Information Type

Logical Expression 1

Logical Expression Logical Operator - either “AND” or “OR” that connects one logical expression to the next sequential logical expression

Number of Logical Elements

o Logic Element 1.1

- Logical element logical operator - either “AND” or “OR” or „OR NOT” or “And NOT” that connects one logical element to the next sequential logical element
- Code Group x.x – allowable values that meet the stated criteria
- Code Type
- Occurrence Min
- Occurrence Max
- Code Period Unit
- Code Period Length

End/Logic Element 1.1 End/Logical Expression 1

Section III. – **Code Information** – Contains all the data information pertaining to the codes used in Patient Population, Measure Exclusions, Numerator, Denominator and Denominator Exceptions

Codes

- Code Group Number (xx.xxxxxx)
- Code Description
- Code Type – coding system
- Code Type Version – Version date or number used for the code system
- Code – actual code number
-

Appendix B: Data Dictionary

Performance Measure Data Dictionary

Date Element	XML Data Element	Description	Data Type	Format	Sample Values	Required
Age Type	AgeType	Determines whether gestational age or birth age should be used for the calculation	String	String	Gestational, Birth	No
Age Unit	AgeUnit	Unit of the specified age (Weeks, Months, Years).	String	Weeks, Months, Years	Months	No
Approved by	ApprovedBy	Listing of organizations that have endorsed or approved the measure	String	String	AMA	No
Calculation Description	CalculationDescription	Description of the how the measure is calculated	String	String		No
Code	Code	Actual code number	String	String	99201	Yes
Code Description	Description	Description of the Code Group	String	String	DX CODE	Yes
Code Group	CodeGroup	The code group number used to represent a grouping of one or more codes to be used in the LogicalElement.	String	MeasureDeveloper ID.Sequence#	02.001023	Yes
Code Group Description	CodeGroupDescription	Description of the Code Group	String	String	DX CODE	Yes
Code Period Length	CodePeriodLength	Length of time in terms of (weeks, months, years, etc) referenced in the Logical Element.	Int	Int	12	No
Code Period Unit	CodePeriodUnit	Unit of time referenced in the Logical Element.	String	Weeks, Months, Years, or textual description	Measurement year or prior year	No
Code Type	CodeType	Terminology or Code set being used to define this Logic Element	String	String	C4 I9 SNM LN NDC	Yes
Code Type Version	CodeTypeVersion	Version date or number used for the code system	String	String	2006	Yes

Copyright	Copyright	Copyright Statement for the specific measure	String	String	© 2006 American Medical Association.	Yes
Date approved	DateApproved	Date on which the listed organization approved the measure	Date	YYYY-MM-DD	2007-08-13	No
Date sent	DateSent	Date on which the measure developer submitted the quality measure for approval. This is date it was sent by the measure developer, not date sent to the vendor.	Date	YYYY-MM-DD	2007-08-13	No
Death	Death	Represents if the patient has died	String	True or Null	Death -True or Null	No
Disclaimer	Disclaimer	Disclaimer Statement for the specific measure	String	String	Physician Performance Measures (Measures) and related data specifications, developed by the Physician Consortium for Performance Improvement™ (the Consortium), are intended to facilitate quality improvement activities by Physicians.	No
Endorsed By	EndorsedBy	Listing of organizations that have endorsed the measure	String	String	AMA	No
Endorsed Date	EndorsedDate	Date in which the listed organization endorsed the measure	Date	YYYY-MM-DD	2007-08-13	No
Sex	Sex	Gender to which a measure or Information Type applies	String	String	Male, Female, Unknown	No
Improvement notation	ImprovementNotation	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	String	String		No

Information	Information	The Information element contains the body of the measure and will and is to represent PatientPopulation, Measure Exclusions, Numerator, Denominator, and Denominator Exceptions (as specified in its <i>Type</i> attribute).	Information			Yes
Information Type	Type	Type of the Information element such as “PatientPopulation” or “Denominator” corresponding to the appropriate section of the measure. In XML, this is an attribute of the <Information> element	String	String	PatientPopulation Measure Exclusions, Numerator, Denominator, Exceptions	Yes
Information Type Calculation Date	InformationTypeCalculationDate	Date to which the calculation of Information Type applies (if different than the Measure)	Date	YYYY-MM-DD	2007-08-13	No
Interpretation Code	InterpretationCode	Textual interpretation of the observation values	String	String	Abnormal, Severe, Moderate, Mild, Normal	Yes
Location Current	LocationCurrent	Current Location of Patient	String	String	ER	No
Location Source	LocationSource	Source Location of the Patient	String	String	ER	No
Location Target	LocationTarget	Target Location of the Patient	String	String	Home	No

Logical Element	LogicalElement	Some basics bits of information such as Code type and code group number that constitute a “Logical Element”. This contains a code type, code group number, and other pieces of information that define a LogicalElement as detailed below. LogicalElements are always contained within LogicalExpressions	String	String	See Below	Yes
Logical Expression	LogicalExpression	Includes grouping of one or more LogicalElements connected by Logical Operators, AND/ OR. LogicalExpression element represents the logical grouping of one or more LogicalElements connection between two or more LogicalElements. LogicalExpressions can be logically connected to one another by the LogicalOperator attribute. Typically, Boolean expressions in the measure that are encapsulated in parentheses qualify as LogicalExpressions	String	String	See Below	Yes
Logical Operator	LogicalOperator	The logical connection between the LogicalExpressions that follow. This attribute will either be a “AND” or “OR” and represents the logic to use between the current LogicalExpressions and the next sequential LogicalExpression. The last LogicalExpression in an Information type does not require a LogicalOperator.	String	String	AND, OR, ANDNOT, ORNOT	No
Logical Operator	LogicalOperator	The logical connection between the LogicalElements that follow. This attribute will either be a “AND” or “OR” and represents the logic to use between this LogicalElement and the next sequential LogicalElement. The last element in a LogicalExpression does not require a LogicalOperator.	String	String	AND, OR, ANDNOT, ORNOT	No

Maximum Age	MaxAge	Maximum age of the patient population as stated in the measure.	unsignedByte	Unsigned Byte	10	No
Measure Calculation Date	MeasureCalculationDate	The date on which calculations on this measure can start, or a text description of the date to use for this purpose.	String	YYYY-MM-DD or textual description of a relative date.	MeasureStartDate	No
Measure developer	MeasureDeveloper	Name of the measure development organization	String	String	Physician Consortium for Performance Improvement	Yes
Measure developer ID	MeasureDeveloperID	ID of the measure development organization	String	String	CAD-1	Yes
Measure ID	Measure ID	Identifier used to describe a particular measure	String	String	CAD1	Yes
Measure name	Name	Common name of the measure (used in supporting documents – e.g., clinician edition)	String	String	Antiplatelet Therapy	Yes
Measure statement	MeasureStatement	A textual description of the purpose of the measure	String	String	Antiplatelet Therapy (CAD-1): Percentage of patients with CAD who were prescribed antiplatelet therapy	Yes
Measurement length	MeasurementLength	Length of time during the measurement period as specified by the MeasurementUnit.	unsignedByte	Unsigned Byte	12	No
Measurement unit	MeasurementUnit	Unit of time describing the measurement period.	String	String	Weeks, Months, Years, or textual description of a time frame.	Yes
Minimum Age	MinAge	Minimum age of the patient population as stated in the measure.	unsignedByte	Unsigned Byte	5	No
Notice of Use	Noticeofuse	Notice of Use Statement for the specific measure	String	String	This performance measure was developed and is owned by...	No
Number of Logical Elements	NumberOfLogicalElements	The number of LogicalElements that are included to properly identify the Denominator, Numerator, or other Information types such as Denominator Exceptions.	Int	Integer	10	Yes

Number Of Logical Expressions	NumberOfLogicalExpressions	The number of Logical Expressions that are included to properly identify the numerator, denominator, or other sections of the measure.	Int	Integer	3	Yes
Observation value Maximum	MaxObservationValue	Maximum value for the observation (lab or test value)	Int	Integer	10	No
Observation value Minimum	MinObservationValue	Minimum value for the observation (lab or test value)	Int	Integer	mg/mL, ml, g/L	No
Observation value Units	ObservationValueUnit	Units for the observation (lab or test value)	String	String	10	No
Occurrence Maximum	OccurrenceMax	Maximum occurrence of an action as stated in the specified code group such as office visits.	Int	Integer	10	No
Occurrence Minimum	OccurrenceMin	Minimum occurrence of an action as stated in the specified code group such as office visits.	Int	Integer	5	No
Rationale	Rationale	Clinical reason for implementing this quality measure	String	String		No
Social Behavior	SocialBehavior	Represents a type of social behavior such as smoking or	String	String	Smokes	No
Social Behavior Status	SocialBehaviorStatus	Represents the status of the Behavior	String	String	Current, Past,	No
Statement	Statement	Textual description of the purpose of this information type. This is where the statement for Denominator, Numerator, or other information types is specified.	String	String	All patients with CAD >= 18 years of age	No
Topic type	TopicType	Clinical condition, specialty or activity for which the measure was developed to address	String	String	CORONARY ARTERY DISEASE (CAD)	Yes
Version	Version	Version number of file/document	Decimal	Major.Minor	1.0	Yes
Version date	VersionDate	Date on which the last version was created.	Date	YYYY-MM-DD	2007-08-13	Yes

Appendix C: Measure XSD

Measure XSD

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <xs:element name="Measure">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="TopicType" type="xs:string"/>
        <xs:element name="MeasureDeveloper" type="xs:string"/>
        <xs:element name="MeasureDeveloperID" type="xs:string"/>
        <xs:element name="MeasureRegistryID" type="xs:string"/>
        <xs:element name="DateSent" type="xs:date" minOccurs="0"/>
        <xs:element name="ApprovedBy" type="xs:string" minOccurs="0"/>
        <xs:element name="DateApproved" type="xs:date" minOccurs="0"/>
        <xs:element name="EndorsedBy" type="xs:string" minOccurs="0"/>
        <xs:element name="EndorsedDate" type="xs:date" minOccurs="0"/>
        <xs:element name="Rationale" type="xs:string" minOccurs="0"/>
        <xs:element name="ImprovementNotation" type="xs:string" minOccurs="0"/>
        <xs:element name="MeasureStatement" type="xs:string"/>
        <xs:element name="MeasurementUnit" type="xs:string"/>
        <xs:element name="MeasurementLength" type="xs:unsignedByte" minOccurs="0"/>
        <xs:element name="Copyright" type="xs:string"/>
        <xs:element name="Disclaimer" type="xs:string" minOccurs="0"/>
        <xs:element name="NoticeOfUse" type="xs:string" minOccurs="0"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="Information Type" maxOccurs="unbounded">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Statement" type="xs:string" minOccurs="0"/>
        <xs:element name="MinAge" type="xs:unsignedByte" minOccurs="0"/>
        <xs:element name="MaxAge" type="xs:unsignedByte" minOccurs="0"/>
        <xs:element name="AgeUnit" type="xs:string" minOccurs="0"/>
        <xs:element name="AgeType" type="xs:string" minOccurs="0"/>
        <xs:element name="MinObservationValue" type="xs:unsignedByte" minOccurs="0"/>
        <xs:element name="MaxObservationValue" type="xs:unsignedByte" minOccurs="0"/>
        <xs:element name="ObservationValueUnit" type="xs:string" minOccurs="0"/>
        <xs:element name="InterpolationCode" type="xs:string" minOccurs="0"/>
        <xs:element name="ObservationCalcPeriod" type="xs:string" maxOccurs="0"/>
        <xs:element name="Sex" type="xs:string" minOccurs="0"/>
        <xs:element name="CalculationDescription" type="xs:string" minOccurs="0"/>
        <xs:element name="MeasureCalculationDate" type="xs:string" minOccurs="0"/>
        <xs:element name="SocialBehavior" type="xs:string" minOccurs="0"/>
        <xs:element name="SocialBehaviorStatus" type="xs:string" minOccurs="0"/>
        <xs:element name="Death" type="xs:string" minOccurs="0"/>
        <xs:element name="LocationCurrent" type="xs:string" minOccurs="0"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>

```

```

<xs:element name="LocationSource" type="xs:string" minOccurs="0"/>
<xs:element name="LocationTarget" type="xs:string" minOccurs="0"/>
<xs:element name="NumberOfLogicalExpressions" type="xs:int"/>
<xs:element name="LogicalExpression" minOccurs="unbounded">

  <xs:complexType>

    <xs:sequence>

      <xs:element name="NumberOfLogicalElements" type="xs:int"/>
      <xs:element name="LogicalElement" minOccurs="unbounded">

        <xs:complexType>

          <xs:sequence>

            <xs:element name="CodeGroup">

              <xs:complexType>

                <xs:simpleContent>
                  <xs:extension base="xs:string">
                    <xs:attribute name="Description" type="xs:string" use="required"/>
                  </xs:extension>
                </xs:simpleContent>
              </xs:complexType>
            </xs:element>
            <xs:element name="CodeType" type="xs:string"/>
            <xs:element name="OccurrenceMin" type="xs:int" minOccurs="0"/>
            <xs:element name="OccurrenceMax" type="xs:int" minOccurs="0"/>
            <xs:element name="CodePeriodUnit" type="xs:string" minOccurs="0"/>
            <xs:element name="CodePeriodLength" type="xs:int" minOccurs="0"/>
          </xs:sequence>
          <xs:attribute name="LogicalOperator" type="xs:string" use="optional"/>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
    <xs:attribute name="Type" type="xs:string" use="required"/>
  </xs:complexType>
</xs:element>
<xs:sequence>
  <xs:element name="ID" type="xs:string" use="required"/>
  <xs:attribute name="Name" type="xs:string" use="required"/>
  <xs:attribute name="Version" type="xs:decimal" use="required"/>
  <xs:attribute name="VersionDate" type="xs:date" use="required"/>
</xs:complexType>
</xs:element>

```

</xs:schema>

Appendix D: Codes XSD

Codes XSD

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <xs:element name="Codes">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="CodeGroup" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="Code" maxOccurs="unbounded">
                <xs:complexType>
                  <xs:simpleContent>
                    <xs:extension base="xs:string">
                      <xs:attribute name="CodeType" type="xs:string" use="required" />
                    </xs:extension>
                  </xs:simpleContent>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType>
    <xs:sequence>
      <xs:element>
        <xs:sequence>
          <xs:attribute name="CodeTypeVersion" type="xs:string" use="required" />
          <xs:attribute name="Description" type="xs:string" use="required" />
          <xs:attribute name="CodeGroupNumber" type="xs:string" use="required" />
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

Sample Performance Measure Specifications

Appendix E: Sample Performance Measure – CAD 1

CAD1 Performance Measure Description

CORONARY ARTERY DISEASE (CAD)

Algorithm for Measures Calculation – EHRS (Analytic Narrative and Data Elements)

PATIENT SELECTION CRITERIA

Include if **ALL** the following criteria are met:

- At least two **face-to-face office visits** with the physician, physicians' assistant, or nurse practitioner during the measurement time period
- Is **18 years or older** at the beginning of the measurement time period
- Patient has a **documented diagnosis** of Coronary Artery Disease (CAD)

➤ *List of Data Elements located in Appendix A*

Physician Performance Measures (Measures) and related data specifications, developed by the Physician Consortium for Performance Improvement® (the Consortium), are intended to facilitate quality improvement activities by physicians.

These Measures are intended to assist physicians in enhancing quality of care. Measures are designed for use by any physician who manages the care of a patient for a specific condition or for prevention. These performance Measures are not clinical guidelines and do not establish a standard of medical care. The Consortium has not tested its Measures for all potential applications. The Consortium encourages the testing and evaluation of its Measures.

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At least two face-to-face office visits with physician, physicians' assistant, or nurse practitioner occurring during the measurement time period.

ENCOUNTER CODE (C4)
99201-99205, 99212-99215,
99241-99245, 99354-99355
99385-99387, 99395-99397,
99401-99404

AND

Patient is 18 years or older at the beginning of the measurement time period

AND

Patient has a documented diagnosis of CAD

DX CODE (I9)	PROC CODE (C4)
414.00-414.07, 414.8, 414.9,	92980-92982, 92984,
410.00-410.92, 412,	92995, 92996, 33140,
411.0-411.89, 413.0-413.9	33510-33514, 33516-33519,
V45.81, V45.82	33521-33523, 33533-33536

Antiplatelet Therapy (CAD-1): Percentage of patients with CAD who were prescribed antiplatelet therapy

Measurement Period: Twelve consecutive months

Denominator: All patients with CAD \geq 18 years of age

Denominator Inclusions

All patients with a documented diagnosis of CAD and patient is 18 years or older at the beginning of the measurement period.

TOPIC_EVALUATION_CODES Table lists applicable ICD-9 (I9) and CPT (C4) codes for inclusion:

DX CODE (I9)	PROC CODE (C4)
414.00-414.07, 414.8, 414.9,	92980-92982, 92984,
410.00-410.92, 412,	92995, 92996, 33140,
411.0-411.89, 413.0-413.9	33510-33514, 33516-33519,
V45.81, V45.82	33521-33523, 33533-33536

Numerator: Patients who were prescribed antiplatelet therapy (aspirin, clopidogrel or combination of aspirin and dipyridamole)

Numerator Inclusion-Option #1

TOPIC_DRUG_CODES Table lists applicable drug codes for patients who were either prescribed aspirin or clopidogrel therapy during the measurement period and DRUG_EXCLUSION = N.

OR

Numerator Inclusion-Option #2

TOPIC_EVALUATION_CODE Table lists applicable CPT (C4) Category II codes for patients who were either prescribed aspirin or clopidogrel therapy during the measurement period.

ANTIPLATELET THERAPY CODE (C4)
4011F

Denominator Exception (*Exceptions only applied if the patient did not receive antiplatelet therapy*)

TOPIC_MEDICAL_EXCLUSION Table lists applicable SNOMED (SNM) codes for medical reason exclusion:

EXCLUSION CODE (SNM)
64779008

OR

TOPIC_MEDICAL_EXCLUSION Table lists applicable ICD-9 (I9) codes for adverse effects exclusion where an ADVERSE_EFFECT_1 code must be accompanied by an ADVERSE_EFFECT_2 code:

ADVERSE EFFECT 1 CODE (I9)	ADVERSE EFFECT 2 CODE (I9)
995.0, 995.1, 995.2	E935.3, E934.8

OR

TOPIC_MEDICAL_EXCLUSION Table lists applicable SNOMED (SNM) codes for allergy or intolerance to antiplatelet therapy:

ALLERGY CODE (SNM)
292044008, 407592005, 293586001

OR

TOPIC_MEDICAL_EXCLUSION Table lists applicable CPT II (C4) code for

practitioner reason for exclusion:

Other medical reason documented by practitioner for not prescribing antiplatelet therapy

EXCLUSIONS MEDICAL (C4)
4011F 1P

OR

TOPIC_MEDICAL_EXCLUSION Table lists applicable CPT II (C4) code for

patient reason for exclusion:

Other patient reason (e.g. economic, social, religious) for not prescribing antiplatelet therapy

**EXCLUSIONS PATIENT
(C4)**

4011F 2P

OR

TOPIC_MEDICAL_EXCLUSION Table lists applicable CPT II (C4) code for

system reason for exclusion:

Other System reason (e.g., resources to perform service not available) for not prescribing antiplatelet therapy

**EXCLUSIONS SYSTEM
(C4)**

4011F 3P

CAD 1 Translated into the Performance Measure Template

Section I. – Measure General Information

- Measure ID – **CAD1**
- Measure name - **Antiplatelet Therapy**
- Version – **1.1**
- Version date - **07/09/2007**
- Topic type - **CORONARY ARTERY DISEASE (CAD)**
- Measure developer - **Physician Consortium for Performance Improvement**
- Measure developer ID - **CAD-1**
- Measure statement- summary statement of measure -**Antiplatelet Therapy (CAD-1): Percentage of patients with CAD who were prescribed antiplatelet therapy**
- Measurement unit -**Month**
- Measurement length -**12**
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Section II. – Measure Information

Information Type="**Patient Population**"

Statement -**At least two face-to-face office visits with the physician, physicians' assistant, or nurse practitioner during the measurement time period. Is 18**

years or older at the beginning of the measurement time period. Patient has a documented diagnosis of Coronary Artery Disease (CAD).

MinAge= **18**

AgeUnit=**Years**

Measure Calculation Date=**Measure Start Date**

Number Of Logical Expressions=**2**

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Logical Expression Logical Operator=**AND**

Number Of Logical Elements=**1**

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Code Group=**02.001001**

Code Type= **C4**

Occurrence Min= **2**

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<End/Logical Expression>

<Logical Expression>

Number Of Logical Elements=**2**

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Logical Element Logical Operator="**OR**"

Code Group= **02.001002**

Code Type=**I9**

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<Logical Element>

Code Group=**02.001003**

Code Type=**C4**

<End/Logical Element>

<End/Logical Expression>

Information Type="**Denominator**"

Statement=**All patients with CAD >= 18 years of age**

Min Age=**18**

Age Unit=**Years**

Number Of Logical Expressions=**1**

<Logical Expression>

Number Of Logical Elements=**2**

<Logical Element>

Logical Element Logical Operator="**OR**"

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Code Type=**I9**
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<Logical Element>
Code Group=**02.001003**
Code Type=**C4**
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<End/Logical Expression>

Information Type="**Numerator**"

Statement=**Patients who were prescribed antiplatelet therapy (aspirin, clopidogrel or combination of aspirin and dipyridamole)**

Number Of Logical Expressions=**1**

<Logical Expression>
Number Of Logical Elements=**2**

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Code Type=**NDC**
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Code Group=**02.001005**
Code Type=**C4**
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<End/Logical Expression>

Information Type="**Denominator Exceptions**"

Statement = **Exceptions only applied if the patient did not receive antiplatelet therapy**

Number Of Logical Expressions=**2**

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Number Of Logical Elements=**3**

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Code Group= **02.001006**

Code Type=**SNM**
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Code Group=**02.001007**
Code Type=**I9**
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Code Type= **I9**
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<Logical Expression>
Number Of Logical Elements=**4**

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Code Group=**02.001009**
Code Type=**SNM**

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Code Group>**02.001010**
Code Type=**C4**
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Logical Element Logical Operator="**OR**"
Code Group=**02.001011**
Code Type=**C4**
<End/Logical Element>

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Code Group=**02.001012**
Code Type=**C4**
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<End/Logical Expression>

Section III. – Code Information

Codes
Code Group
CodeTypeVersion =**2008**

CodeGroup Description=**ENCOUNTER CODE**

CodeGroupNumber = **02.001001**

CodeType = **C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2007**

CodeGroup Description=**DX CODE**

Code Group Number=**02.001002**

Code Type=**I9**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2007**

CodeGroup Description= **PROC CODE**

Code Group Number=**02.001003**

Code Type=**C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2007**

CodeGroup Description= **TOPIC_DRUG_CODES**

Code Group Number=**02.001004**

Code Type=**NDC**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2007**

CodeGroup Description= **ANTIPLATELET THERAPY**

Code Group Number=**02.001005**

Code Type=**C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **EXCLUSION CODE**

Code Group Number=**02.001006**

Code Type=**SNM**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **ADVERSE EFFECT 1 CODE**

Code Group Number=**02.001007**

Code Type=**I9**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **ADVERSE EFFECT 2 CODE**

Code Group Number=**02.001008**

Code Type=**I9**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **ALLERGY CODE**

Code Group Number=**02.001009**

Code Type=**SNM**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **EXCLUSIONS MEDICAL**

Code Group Number=**02.001010**

Code Type=**C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **EXCLUSIONS PATIENT**

Code Group Number=**02.001011**

Code Type=**C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

Code Group

CodeTypeVersion =**2008**

CodeGroup Description= **EXCLUSIONS SYSTEM**

Code Group Number=**02.001012**

Code Type=**C4**

Code= *Please refer to the “CAD 1 Codes XML Document” for a complete list of the specific codes

CAD 1 Measure XML Document

```
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<Measure xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Measure.xsd" ID="CAD1"
Name="Antiplatelet Therapy" Version="0.1" VersionDate="2007-07-24">
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  <MeasureDeveloper>Physician Consortium for Performance Improvement</MeasureDeveloper>
  <MeasureDeveloperID>CAD-1</MeasureDeveloperID>
  <MeasureStatement>Antiplatelet Therapy (CAD-1): Percentage of patients with CAD who were prescribed antiplatelet
therapy</MeasureStatement>
  <MeasurementUnit>Month</MeasurementUnit>
  <MeasurementLength>12</MeasurementLength>
  <Copyright>© 2006 American Medical Association. All Rights Reserved
  CPT® contained in the Measures specifications is copyright 2004 American Medical Association.
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  </Copyright>
</Disclaimer>
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  any physician who manages the care of a patient for a specific condition or for prevention. These performance
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  THE SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.
  </Disclaimer>
<Information Type="PatientPopulation">
  <Statement>
```


At least two face-to-face office visits with the physician, physicians' assistant, or nurse practitioner during the measurement time period. Is 18 years or older at the beginning of the measurement time period. Patient has a documented diagnosis of Coronary Artery Disease (CAD).

```

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CAD 1 Codes XML Document

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    <Code CodeType="I9">410.92 </Code>
    <Code CodeType="I9">412 </Code>
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  </CodeGroup>
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</CodeGroup>
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  <Code CodeType="I9">995.2 </Code>
</CodeGroup>
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</CodeGroup>
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  <Code CodeType="SNM">407592005</Code>
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  <Code CodeType="C4">4011F 2P </Code>
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</Codes>

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Appendix F: Sample Performance Measure – Diabetes 1

Sample Performance Measure- Diabetes 1

Diabetes 1 Performance Measure Description

DIABETES

HbA1c Management: Poor Control (Source: NCOA)				
DESCRIPTION: The percentage of patients 18–75 years of age with diabetes (type 1 or type 2) who had <ul style="list-style-type: none"> HbA1c in poor control (>9.0%) 				
NUMERATOR	DENOMINATOR	EXCLUSION	CODES	DATA SOURCE
ELECTRONIC SPECIFICATION: Using automated laboratory data identify the most recent HbA1c test during the measurement year. The patient is numerator compliant if the most recent automated HbA1c level is >9.0% or is missing a result or if an HbA1c test was not done during the measurement year. The patient is not numerator compliant if the automated result for the most recent HbA1c test during the measurement year is 9.0%. If the most recent test during the measurement year is identified by a CPT Category II code,	ELECTRONIC SPECIFICATION: Patients 18-75 years of age as of December 31 of the measurement year who had a diagnosis of diabetes (type 1 or type 2). Two methods are provided to identify patients with diabetes during the measurement year, or year prior to measurement year, pharmacy and claim / encounter data: Pharmacy data: Patients who were dispensed insulin or oral hypoglycemics/ anihyperglycemics during the measurement year or year prior to the measurement year on an ambulatory basis (Table	ELECTRONIC SPECIFICATION: Exclude patients with a diagnosis of polycystic ovaries who did not have any face-to-face encounters with the diagnosis of diabetes in any setting, during the measurement year or year prior to the measurement year. Diagnosis of polycystic ovaries can occur at any time in the patient's history, but must have occurred by December 31 of the measurement year. Use the codes in Table CDC-B to identify a diagnosis	See code Tables A – C and M under HbA1c Testing. Table CDC-A: Prescriptions to Identify Diabetics	Patient demographics, claims or encounter data for visits, procedures and pharmacy. The medical record option requires manual or electronically coded data for visits or encounters to determine the sample, and access to either written or electronic medical records to both confirm information in the sampling framework for the denominator
			Description	
			Prescriptions	
			Insulin <ul style="list-style-type: none"> Mix 50/50 Mix 70/30 Mix 75/25 Apidra (glulisine) Continuous subcutaneous infusion of insulin Exubera Humalog Humulin Iletin Insulin pen Insulin pump Regular insulin NPH Lente Levemir (detemir) Lantus glargine) Lispro Multiple daily injections Novolin Novolog Penfill Semilente Ultralente Velosulin 	
			Oral hypoglycemic/ anihyperglycemic <ul style="list-style-type: none"> Acetohexamide Actos ActosPlus Met Amaryl Avandamet (Metformin-Rosiglitazone) Avandaryl (Glimepiride-Glimepiride- Diabeta Diabinese Dymelor Glimepiride Glipizide Glipizide XL Glucamide Glucotrol Glyname Glyset Metaglip (Glipizide-Metformin) Micronase Miglitol Nateglinide Orinase Precose (Acarbose) Rezulin Rosiglitazone Starlix Tolazamide Tolamide Tolbutamide Tolinase 	

HbA1c Management: Poor Control (Source: NCOA)

use Table CDC-E to evaluate whether the patient is numerator compliant (3046F indicates the patient is numerator compliant; 3047F indicates the patient is not numerator compliant). Note: For this indicator, a lower rate indicates better performance (i.e., low rates of poor control indicate better care). MEDICAL RECORD SPECIFICATION: The most recent HbA1c level (performed during the measurement year) is >9.0% or is missing or was not done during the measurement year. The patient is not numerator compliant is the result for the most recent HbA1c test during the measurement year is ≤9.0%. At a minimum, documentation in the medical record must include a note indicating the date on which the HbA1c test was performed and the result.	CDC-A). Claim/Encounter Data: Patients who had two face-to-face encounters with different dates of service in an outpatient setting or nonacute inpatient setting or one face-to-face encounter in an acute inpatient or emergency department (ED) setting during the measurement year or the year prior to the measurement year with a diagnosis of diabetes. Services that occur over both years may be counted. Use the codes in Table CDC-B to identify a diabetes diagnosis and Table CDC-C to identify the visit type. MEDICAL RECORD SPECIFICATION: A systematic sample from the population listed above should be determined using the most accurate data available in the settings in which the measure will be implemented. The measure developer recommends that in most settings office visit claims	of diabetes and the codes in CDC-M to identify a diagnosis of polycystic ovaries. Exclude patients with gestational diabetes or steroid-induced diabetes, who did not have any face-to-face encounters with the diagnosis of diabetes (in any setting), during the measurement year or year prior to the measurement year. Diagnosis of gestational diabetes or steroid-induced diabetes can occur during the measurement year or the year prior to the measurement year, but must have occurred by December 31 of the measurement year. Use the codes in Table CDC-B to identify a diagnosis of diabetes and the codes in CDC-M to identify gestational diabetes and steroid-induced		Rosiglitazone) <ul style="list-style-type: none">• Avandia• Byetta (Exenatide)—Oral• Chlorpropamide	<ul style="list-style-type: none">• Glucotrol XL• Glucovance (Glyburide-Metformin)• Glyburide	<ul style="list-style-type: none">• Orimide• Pioglitazone• Prandin (Repaglinide)	and for determination of the numerator.
Note: Removed Glucophage / metformin from Table CDC-A in HEDIS 2005. Diabetic patients on these medications are identified through diagnosis coding only. NCOA's Web site at www.ncqa.org will provide a list of medications by November 15, 2006.							
Table CDC-B: Codes to Identify Diabetes							
		Description	ICD-9-CM Diagnosis		DRG		
Diabetes		250, 357.2, 362.0, 366.41, 648.0		294, 295			
Table CDC-C: Codes to Identify Visit Type							
		Description	CPT		UB-92 Revenue		
Outpatient		92002-92014, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456, 99499		051x, 0520-0523, 0526-0529, 057x-059x, 077x, 082x-085x, 088x, 0982, 0983			
Nonacute inpatient		99301-99313, 99315, 99316, 99318, 99321-99328, 99331-99337		0118, 0128, 0138, 0148, 0158, 019x, 055x, 066x			
Acute inpatient		99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99261-99263, 99291		010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x-022x, 072x, 080x, 0987			
Emergency department		99281-99285		045x, 0981			
Table CDC-D: Codes to Identify HbA1c Tests							

HbA1c Management: Poor Control (Source: NCQA)

	(see list of codes) or other codified encounter data should be used to identify patients who have had at least one office visit in the prior (12) months from which a purposeful sample (random, consecutive retrospective or prospective from a specific date) can then be chosen for the denominator. In other uses of the measure, insurer level claims (pooled or single insurer) data can be used to identify the denominator.	diabetes. MEDICAL RECORD SPECIFICATION: Exclude patients with a diagnosis of polycystic ovaries on the problem list who did not also have a diagnosis of diabetes on the problem list during the measurement year or year prior to the measurement year. Exclude patients with a diagnosis of gestational diabetes or steroid-induced diabetes on the problem list during the measurement year.	CPT 83036, 83037	CPT Category II 3046F, 3047F	LOINC 4548-4, 4549-2, 17856-6

Table CDC-E: Codes to Identify HbA1c Levels

Description	CPT Category II
Numerator compliant (HbA1c >9.0%)	3046F
Not numerator compliant (HbA1c 9.0%)	3047F

Table CDC-M: Codes to Identify Exclusions

Description	ICD-9-CM Diagnosis
Polycystic ovaries	256.4
Steroid induced	251.8, 962.0
Gestational diabetes	648.8

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Diabetes 1 Populated in the Performance Measure Template

Section I. – Measure General Information –

- Measure ID – **Diabetes1**
- Measure name - **NCQA Diabetes Measure**
- Version – **1.1**
- Version date - **07/09/2007**
- Topic type - **Diabetes**
- Measure developer - **NCQA**
- Measure developer ID - **NCQA-1**
- Measure statement- summary statement of measure -**The percentage of patients 18–75 years of age with diabetes (type 1 or type 2) who had HbA1c in poor control (>9.0%)**
- Measurement unit –**Measurement Year**
- Notice of Use- **This performance measure was developed and is owned by the National Committee for Quality Assurance ("NCQA"). This performance measure is not a clinical guideline and do not establish a standard of medical care. NCQA makes no representations, warranties, or endorsement about the quality of any organization or physician that uses or reports performance measures and NCQA has no liability to anyone who relies on such measures. NCQA holds a copyright in this measure and can rescind or alter this measure at any time. Users of the measure shall not have the right to alter, enhance, or otherwise modify the measure and shall not disassemble, recompile, or reverse engineer the source code or object code relating to the measure. Anyone desiring to use or reproduce the measure without modification for a noncommercial purpose may do so without obtaining any approval from NCQA. All commercial uses must be approved by NCQA and are subject to a license at the discretion of NCQA. 12 Broad public use and dissemination of these measures is encouraged and the measure developers have agreed with NQF that noncommercial uses do not require the consent of the measure developer. Use by health care providers in connection with their own practices is not commercial use. Commercial use of a measure does require the prior written consent of the measure developer. As used herein, a “commercial use” refers to any sale, license, or distribution of a measure for commercial gain, or incorporation of a measure into any product or service that is sold, licensed, or distributed for commercial gain, (even if there is no actual charge for inclusion of the measure**

Section II. – Measure Information

Information Type="**Denominator**"

Statement=**Patients 18-75 years of age as of December 31 of the measurement year who had a diagnosis of diabetes (type 1 or type 2)**

Min Age=**18**

Max Age=**75**

Age Unit=**Years**

Measure Calculation Date= **December 31 of measurement year**

Number Of Logical Expressions=3

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Number Of Logical Elements=2

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Code Type=I9

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Code Type=DRG

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Number Of Logical Elements=4

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Code Type=C4

OccurrenceMin=2

OccurrenceMax=2

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Logical Element Logical Operator="OR"

Code Group=01.000504

Code Type=UB-92

OccurrenceMin=2

OccurrenceMax=2

<End/Logical Element>

<Logical Element>

Logical Element Logical Operator="OR"

Code Group=01.000505

Code Type=C4

OccurrenceMin=2

OccurrenceMax=2

<End/Logical Element>

<Logical Element>

Code Group=01.000506

Code Type=UB-92

OccurrenceMin=2

OccurrenceMax=2

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Number Of Logical Elements=4

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Code Group=01.000507

Code Type=C4

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OccurrenceMax=1

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Code Group=01.000508

Code Type=UB-92

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Logical Element Logical Operator="OR"

Code Group=01.000509

Code Type=C4

OccurrenceMin=1

OccurrenceMax=1

<End/Logical Element>

<Logical Element>

Code Group=01.000510

Code Type=UB-92

OccurrenceMin=1

OccurrenceMax=1

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<End /Logical Expression>

Information Type="Numerator"

Statement= **Patients whose HbA1c level is =9.0% or are missing a result or if an HbA1c test was not done during the measurement year.**

Number Of Logical Expressions=1

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Number Of Logical Elements=1

<Logical Element>

Code Group=**01.000514**
Code Type=**C4**
<End/Logical Element>

<End /Logical Expression>

Information Type="**Exclusions** "

Statement= **Patients with gestational diabetes or steroid-induced diabetes or a diagnosis of polycystic ovaries who did not have any face-to-face encounters with the diagnosis of diabetes in any setting, during the measurement year or year prior to the measurement year**

Number Of Logical Expressions=**2**

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Logical Expression Logical Operator="**AND**"

Number Of Logical Elements=**3**

<Logical Element>

Logical Element Logical Operator="**OR**"

Code Group=**01.000516**

Code Type=**I9**

<End/Logical Element>

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Logical Element Logical Operator="**OR**"

Code Group=**01.000517**

Code Type=**I9**

<End/Logical Element>

<Logical Element>

Code Group=**01.000518**

Code Type=**I9**

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<Logical Element>

Logical Element Logical Operator="**AND**"

Code Group=**01.000504**

Code Type=**UB-92**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

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Code Type=**C4**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

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<Logical Element>

Logical Element Logical Operator="AND"

Code Group=**01.000506**

Code Type=**UB-92**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

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Logical Element Logical Operator="AND"

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Code Type=**C4**

Code Period Unit=**Measurement year or prior year**

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Code Group=**01.000508**

Code Type=**UB-92**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

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Logical Element Logical Operator="AND"

Code Group=**01.000509**

Code Type=**C4**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

<End/Logical Element>

<Logical Element>

Code Group=**01.000510**

Code Type=**UB-92**

OccurrenceMin=**0**

Code Period Unit=**Measurement year or prior year**

<End/Logical Element>

<End /Logical Expression>

Section III. – Code Information

Codes

Code Group Number=**01.000501**
CodeGroup Description=Diabetes
CodeType=**I9**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000502**
CodeGroup Description=Diabetes
CodeType=**DRG**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000503**
CodeGroup Description=Outpatient
CodeType=**C4**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000504**
CodeGroup Description=Outpatient
Code Type=**UB-92**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000505**
CodeGroup Description=Nonacute inpatient
Code Type=**C4**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000506**
CodeGroup Description=Nonacute inpatient
Code Type=**UB-92**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000507**
CodeGroup Description=Acute inpatient
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000508**
CodeGroup Description=Acute inpatient"
Code Type=**UB-92**
Code= *Please refer to the “Diabetes Codes XML
Document” for a complete list of the specific codes

Code Group Number=**01.000509**
CodeGroup Description=Emergency department

Code Type=**C4**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000510**
CodeGroup Description=Emergency department
Code Type=**UB-92**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000511**
CodeGroup Description=Codes to Identify HbA1c Tests
Code Type=**C4**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000512**
CodeGroup Description=Codes to Identify HbA1c Tests
Code Type=**C2**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000513**
CodeGroup Description=Codes to Identify HbA1c Tests
Code Type=**LN**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000514**
CodeGroup Description=Numerator Compliant
Code Type=**C2**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000515**
CodeGroup Description=Not Numerator Compliant
Code Type=**C4**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000516**
CodeGroup Description=Polycystic ovary
Code Type=**I9**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000517**
CodeGroup Description=Steroid induced
Code Type=**I9**
Code= *Please refer to the “Diabetes Codes XML Document” for a complete list of the specific codes

Code Group Number=**01.000518**

CodeGroup Description=Gestational diabetes

Code Type=**I9**

Code= *Please refer to the “Diabetes Codes XML

Document” for a complete list of the specific codes

Diabetes 1 Measure XML Document

```
<?xml version="1.0" encoding="utf-8"?>
<Measure xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Measure.xsd"
ID="Diabetes1" Name="NCQA Diabetes Measure" Version="0.1" VersionDate="2007-07-09">
```

```
<TopicType>Diabetes</TopicType>
<MeasureDeveloper>NCQA</MeasureDeveloper>
<MeasureDeveloperID>Diabetes</MeasureDeveloperID>
<MeasureStatement>The percentage of patients 18&#x2013;75 years of age with diabetes (type 1 or type 2) who had HbA1c in
poor control (>9.0%)</MeasureStatement>
<MeasurementUnit>Measurement Year</MeasurementUnit>
<Copyright>Â©2006 National Committee for Quality Assurance, all rights reserved.</Copyright>
<NoticeOfUse>
```

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```
</NoticeOfUse>
<Information Type="Denominator">
  <Statement>Patients 18-75 years of age as of December 31 of the measurement year who had a diagnosis of diabetes
  (type 1 or type 2)</Statement>
  <MinAge>18</MinAge>
  <MaxAge>75</MaxAge>
  <AgeUnit>Years</AgeUnit>
  <MeasureCalculationDate>December 31 of measurement year</MeasureCalculationDate>
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  <CodeGroup Description="Diabetes">01.000502</CodeGroup>
  <CodeType>DRG</CodeType>
</LogicalElement>
</LogicalExpression>
<LogicalExpression LogicalOperator="OR">
  <NumberOfLogicalElements>4</NumberOfLogicalElements>
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    <OccurrenceMax>2</OccurrenceMax>
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    <OccurrenceMax>2</OccurrenceMax>
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  <CodeType>C4</CodeType>
  <OccurrenceMin>2</OccurrenceMin>
  <OccurrenceMax>2</OccurrenceMax>
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<LogicalElement>
  <CodeGroup Description="Nonacute inpatient">01.000506</CodeGroup>
  <CodeType>UB-92</CodeType>
  <OccurrenceMin>2</OccurrenceMin>
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</LogicalExpression>
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  <LogicalElement LogicalOperator="OR">
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    <CodeType>UB-92</CodeType>
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    <OccurrenceMax>1</OccurrenceMax>
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  <LogicalElement LogicalOperator="OR">
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    <OccurrenceMax>1</OccurrenceMax>
  </LogicalElement>
  <LogicalElement>
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    <CodeType>UB-92</CodeType>
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    <OccurrenceMax>1</OccurrenceMax>
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  </LogicalExpression>
</Information>

<Information Type="Numerator">
  <Statement>Patients whose HbA1c level is >9.0% or are missing a result or if an HbA1c test was not done during
  the measurement year.</Statement>
  <NumberOfLogicalExpressions>1</NumberOfLogicalExpressions>
  <LogicalExpression>
    <NumberOfLogicalElements>1</NumberOfLogicalElements>
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      <CodeGroup Description="Numerator Compliant">01.000514</CodeGroup>
      <CodeType>C4</CodeType>
    </LogicalElement>
  </LogicalExpression>
</Information>

<Information Type="Exclusions">
  <Statement>Patients with gestational diabetes or steroid-induced diabetes or a diagnosis of polycystic ovaries
  who did not have any face-to-face encounters with the diagnosis of diabetes in any setting, during the
  measurement year or year prior to the measurement year.</Statement>

```

```

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  <LogicalElement LogicalOperator="OR">
    <CodeGroup Description="Steroid induced">01.000517</CodeGroup>
    <CodeType>I9</CodeType>
  </LogicalElement>
  <LogicalElement>
    <CodeGroup Description="Gestational diabetes">01.000518</CodeGroup>
    <CodeType>I9</CodeType>
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</LogicalExpression>
<LogicalExpression>
  <NumberOfLogicalElements>8</NumberOfLogicalElements>
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  <LogicalElement LogicalOperator="AND">
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    <CodeGroup Description="Nonacute inpatient">01.000506</CodeGroup>
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```

</LogicalElement>
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  <CodeGroup Description="Emergency department">01.000509</CodeGroup>
  <CodeType>C4</CodeType>
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  <CodeType>UB-92</CodeType>
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</Information>
</Measure>

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Diabetes 1 Codes XML Document

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<Codes xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Codes.xsd"
MeasureID="Diabetes1">
  <CodeGroup CodeTypeVersion="2006" Description="Diabetes" CodeGroupNumber="01.005001">
    <Code CodeType="I9">250 </Code>
    <Code CodeType="I9">357.2</Code>
    <Code CodeType="I9">362.0</Code>
    <Code CodeType="I9">366.41</Code>
    <Code CodeType="I9">648.0 </Code>
  </CodeGroup>
  <CodeGroup CodeTypeVersion="2006" Description="Diabetes" CodeGroupNumber="01.005002">
    <Code CodeType="DRG">294 </Code>
    <Code CodeType="DRG">295 </Code>
  </CodeGroup>
  <CodeGroup CodeTypeVersion="2006" Description="Outpatient" CodeGroupNumber="01.005003">
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```

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<Code CodeType="C4">99456 </Code>
<Code CodeType="C4">99499 </Code>
</CodeGroup>
<CodeGroup CodeTypeVersion="2006" Description="Outpatient" CodeGroupNumber="01.005004">
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<Code CodeType="UB-92">0523 </Code>
<Code CodeType="UB-92">0526 </Code>
<Code CodeType="UB-92">0529 </Code>
<Code CodeType="UB-92">057x </Code>
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<Code CodeType="UB-92">082x </Code>
<Code CodeType="UB-92">085x </Code>
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<Code CodeType="C4">99328 </Code>
<Code CodeType="C4">99331 </Code>
<Code CodeType="C4">99337 </Code>
</CodeGroup>
<CodeGroup CodeTypeVersion="2006" Description="Nonacute inpatient" CodeGroupNumber="01.005006">
<Code CodeType="UB-92">0118 </Code>
<Code CodeType="UB-92">0128 </Code>
<Code CodeType="UB-92">0138 </Code>
<Code CodeType="UB-92">0148 </Code>
<Code CodeType="UB-92">0158 </Code>
<Code CodeType="UB-92">019x </Code>
<Code CodeType="UB-92">055x </Code>
<Code CodeType="UB-92">066x </Code>
</CodeGroup>

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```

<CodeGroup CodeTypeVersion="2006" Description="Acute inpatient" CodeGroupNumber="01.005007">
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  <Code CodeType="C4">99238 </Code>
  <Code CodeType="C4">99239 </Code>
  <Code CodeType="C4">99251 </Code>
  <Code CodeType="C4">99255 </Code>
  <Code CodeType="C4">99261 </Code>
  <Code CodeType="C4">99263 </Code>
  <Code CodeType="C4">99291 </Code>
</CodeGroup>
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  <Code CodeType="UB-92">0114 </Code>
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