National Hospital Quality Measures

Measure Definitions

Excerpts from the Specifications Manual for Hospital Outpatient Department Quality Measures

Applicable to Cases Discharged January 1, 2012 through June 30, 2012

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Measure Information Forms

**Overview**
Below is a defined overview of the Measure Information Form (MIF) and Flowchart (Algorithm) Formats:

**Note:** An algorithm provides the logical steps, data element evaluation, arithmetic calculations, and data manipulation steps that are required to calculate a given measure. The algorithms and data elements needed to calculate each of the measures are identified in the MIF.

**Measure Set** - The specific national hospital quality outpatient measure set to which an individual measure belongs (e.g., Acute Myocardial Infarction, Chest Pain, ED-Throughput).

**Set Measure ID #** - A unique alphanumeric identifier assigned to a measure. Information associated with a measure is identified by this unique alphanumeric number. (i.e., OP-1, OP-2, OP-3, etc.)

**Performance Measure Name** - A brief title that uniquely identifies the measure.

**Description** - A brief explanation of the measure's focus, such as the activity or the area on which the measure centers attention (e.g., surgical patients who received prophylactic antibiotics consistent with current guidelines).

**Rationale** - The reason for performing a specified process to improve the quality of care outcome. This may include specific literature references, evidence based information, expert consensus, etc.

**Type of Measure** - Indicates what is being evaluated by the measure.

- **Process**: A measure used to assess a goal directed, interrelated series of actions, events, mechanisms, or steps, such as a measure of performance that describes what is done to, for, or by patients, as in performance of a procedure.
- **Outcome**: A measure that indicates the result of performance (or nonperformance) of a function(s) or process(es).
- **Structural**: A measure used to assess the characteristics and capacity of the provider to deliver quality health care.

**Improvement Noted As** - Describes how improvement would be indicated by the measure.

- An increase in the rate/score/number of occurrences (e.g., immunizations).
- A decrease in the rate/score/number of occurrences (e.g., surgical site infections).
- Either an increase or a decrease in the rate/score/number of occurrences, depending upon the context of the measure (e.g., utilization).
**Numerator Statement** - Represents the portion of the denominator that satisfies the conditions of the performance measure.

- **Included Population in Numerator**: Specific information describing the population(s) comprising the numerator, not contained in the numerator statement, or not applicable.
- **Excluded Population in Numerator**: Specific information describing the population(s) that should not be included in the numerator, or none.
- **Data Elements**: Those data elements necessary or required to determine (or establish) the numerator.

**Note**: If the measure is reported as a rate (proportion or ratio), the Numerator and Denominator Statement are completed. If a performance measure does not have both a numerator and a denominator, then a Continuous Variable Statement is completed.

**Denominator Statement** - Represents the population evaluated by the performance measure.

- **Included Population in Denominator**: Specific information describing the population(s) comprising the denominator, not contained in the denominator statement or not applicable.
- **Excluded Population in Denominator**: Specific information describing the population(s) that should not be included in the denominator, or none.
- **Data Elements**: Those data elements required to determine (or establish) the denominator.

**Note**: If the measure is reported as a rate (proportion or ratio), the Numerator and Denominator Statement are completed. If a performance measure does not have both a numerator and a denominator, then a Continuous Variable Statement is completed.

**Continuous Variable Statement** - Describes an aggregate data measure in which the value of each measurement can fall anywhere along a continuous scale.

- **Included Population in Continuous Variable**: Specific information describing the population(s) comprising the performance measure, not contained in the continuous variable statement or not applicable.
- **Excluded Population in Continuous Variable**: Specific information describing the population(s) that should not be included in the performance measure or none.
- **Data Elements**: Those data elements required to determine (or establish) the measure for a continuous variable.

**Note**: If measure is reported as a central tendency, the Continuous Variable Statement is completed. This item is only completed when the performance measure does not have numerator and denominator statements.

**Risk Adjustment** - Indicates whether a measure is subject to the statistical process for reducing, removing, or clarifying the influences of confounding factors to allow more useful comparisons.
Data Collection Approach - Recommended timing for when data should be collected for a measure. Data collection approaches include retrospective, concurrent, prospective or Medicare Claims data collection.

- **Retrospective data collection** involves collecting data for events that have already occurred.
- **Concurrent data collection** is the process of gathering data on how a process works or is working while a patient is in active treatment.
- **Prospective data collection** is data collection in anticipation of an event or occurrence.
- **Medicare Claims data collection** is use of data that is administratively derived from CMS claims and does not require any abstraction.

Data Accuracy - Recommendations to reduce identifiable data errors, to the extent possible.

Measure Analysis Suggestions - Recommendations to assist in the process of interpreting data and drawing valid conclusions.

Sampling - Indicates whether a measure can be sampled. Sampling is a process of selecting a representative part of the population in order to estimate the hospital’s performance, without collecting data for its entire population.

Data Reported As - Indicates how data will be reported for a measure.

- Aggregate rate generated from count data reported as a proportion (e.g., rate-based measures which report summary data generated from the number of AMI patients who received aspirin within 24 hours before or after hospital arrival over all AMI patients).
- Aggregate rate generated from count data reported as a ratio (e.g., bloodstream infection per 1,000 line days).
- Aggregate measures of central tendency (e.g., continuous variables which report means and medians such as median time to fibrinolysis).
- Claims data reported as condition-specific, hospital-specific, or risk-standardized (e.g., 30-day readmission rates).

Selected References - Specific literature references that are used to support the importance of the performance measure.
Algorithm Introduction

Each measure set’s initial patient population and associated measures are described by a unique algorithm. An algorithm is a predefined set of rules that helps to break down complex processes into simple, repetitive steps.

Initial Patient Population algorithms evaluate and identify which episode of care (EOC) records are in the measure set’s population and are eligible to be sampled.

Measure algorithms serve two purposes. First, they evaluate and identify which EOC records contain missing and/or invalid data that will prohibit the ability to properly evaluate the measure. Second, they determine if:

- For rate-based measures, the patient’s EOC record belongs in the measure population described by the denominator, and if the patient experienced the event described in the numerator.
- For continuous variable measures, the patient’s EOC record belongs in the patient population described in the measure’s statement and, if so, to define and calculate the measurement value.

This section contains some standard flow-charting conventions used to develop each algorithm:

- **Flow lines** are used to guide the reader to different parts of the algorithm, with arrows denoting the direction of movement. Generally, movement is from the top to the bottom of the chart.
- **Symbols** used in each algorithm are described later in this section under Flowchart Symbols.
- **Temporary variables** within the algorithm are noted in the variable key at the top of each page.
### Flowchart Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval</td>
<td>Start/Stop (ovals) denotes the beginning or end of an algorithm.</td>
</tr>
<tr>
<td>Diamond</td>
<td>Diamonds represent “If…Then” decision points for logic tests and comparisons. Two or three flow lines exit the decision point to reflect alternative actions based upon an evaluation of the condition(s) stated around the decision point.</td>
</tr>
<tr>
<td>Rectangle</td>
<td>Rectangles or process boxes show when computation or manipulation of the data are required, such as a calculation or summarization.</td>
</tr>
<tr>
<td>Circle</td>
<td>Circle or “On-page” connectors, labeled with a letter, show a link to sections of the algorithm which are continued on the same page.</td>
</tr>
<tr>
<td>Five-sided</td>
<td>Five-sided or “Off-page” connectors, labeled with a letter, show a link to sections of the algorithm which are continued on different pages.</td>
</tr>
<tr>
<td></td>
<td>Note: Both circular, On-page, and five-sided, Off-page connectors containing the letters B, D, E, X or Y lead to measure Outcome Boxes.</td>
</tr>
<tr>
<td></td>
<td>Outcome Boxes represent the result of data passed through the algorithm. Connectors extending from outcome boxes lead to the end of the algorithm or to risk adjustment procedures, where applicable. This symbol is also used to identify the strata within a stratified measure.</td>
</tr>
<tr>
<td></td>
<td>Symbol to represent comments (“note”) that should be taken into account when programming flowchart.</td>
</tr>
<tr>
<td>Open rectangle</td>
<td>The open rectangle symbol is placed alongside the Process box to which they are applicable. Comments are used to expand upon information contained within the process box, such as how to properly calculate age. Comments are never the sole location where processing logic is provided.</td>
</tr>
<tr>
<td>Start/Return</td>
<td>Start/Return symbol denotes the beginning and end of a sub-routine. Algorithms that use this symbol are called from another algorithm and the data processing flow returns to the calling algorithm when the ‘Return’ is encountered.</td>
</tr>
<tr>
<td></td>
<td>See the Initial Patient Population Algorithms and Transmission Data Processing Flows for an example of the usage of this symbol.</td>
</tr>
</tbody>
</table>
Measure Category Assignments

Measure Category Assignments are calculated measure results for each EOC that is processed through a measure algorithm.

The following are the possible Measure Category Assignments:

B  Not in Measure Population
   • For rate-based and continuous variable measures: Record is not a member of the measure’s population.

D  In Measure Population (used for reporting)
   • For rate-based measures: Record is a member of the measure’s population and there has not been an occurrence of the measure.
   • For continuous variable measures: Record is a member of the measure’s population and has sufficient, accurate, and valid data to compute the measurement.

D(#) In Measure Population (used to identify stratified populations of specific measures)
   • For rate-based measures: Record is a member of the measure’s population and there has not been an occurrence of the measure.
   • For continuous variable measures: Record is a member of the measure’s population and has sufficient, accurate, and valid data to compute the measurement.

E  In Numerator Population
   • For rate-based measures: Record is a member of the measure’s population and there has been an occurrence of the measure.
   • For continuous variable measures: Does not apply.

X  Data Are Missing
   • For rate-based and continuous variable measures: Data are missing that is required to calculate the measure. The record will be rejected when transmitted.

Y  Unable to Determine (UTD) Allowable Value Does Not Allow Calculation of the Measure
   • For rate-based measures: Does not apply.
   • For continuous variable measures: Record contains a Date, Time or Numeric data element with a value of ‘UTD.’

1 Measure Category Y is used for informational purposes ONLY and is not used in calculation of continuous variable measures. The category captures a count of UTD values for date and time data elements used in continuous variable measures.
HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES
Acute Myocardial Infarction (AMI)

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP-1</td>
<td>Median Time to Fibrinolysis</td>
</tr>
<tr>
<td>OP-2</td>
<td>Fibrinolytic Therapy Received Within 30 Minutes</td>
</tr>
<tr>
<td>OP-3</td>
<td>Median Time to Transfer to Another Facility for Acute Coronary Intervention</td>
</tr>
<tr>
<td>OP-4</td>
<td>Aspirin at Arrival</td>
</tr>
<tr>
<td>OP-5</td>
<td>Median Time to ECG</td>
</tr>
<tr>
<td>OP-16</td>
<td>Troponin Results Received Within 60 Minutes</td>
</tr>
</tbody>
</table>

1 Measures only applicable to AMI Population
2 Measures apply to both the AMI Population and Chest Pain Population

OP AMI GENERAL DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>CMS Certification Number 1, 2</td>
<td>All Records</td>
</tr>
<tr>
<td>First Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
</tr>
<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>National Provider Identifier 1, 2</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a Payment Source of Medicare who have a standard HIC number</td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
</tr>
<tr>
<td>Physician 1</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
<td>All Records</td>
</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

1 Transmission Data Element
2 Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual
<table>
<thead>
<tr>
<th>OP AMI Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin Received</td>
<td>OP-4</td>
</tr>
<tr>
<td>Discharge Status</td>
<td>OP-1, OP-2, OP-3, OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>E/M Code</td>
<td>OP-1, OP-2, OP-3, OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>ECG</td>
<td>OP-5</td>
</tr>
<tr>
<td>ECG Date</td>
<td>OP-5</td>
</tr>
<tr>
<td>ECG Time</td>
<td>OP-5</td>
</tr>
<tr>
<td>ED Departure Date</td>
<td>OP-3</td>
</tr>
<tr>
<td>ED Departure Time</td>
<td>OP-3</td>
</tr>
<tr>
<td>Fibrinolytic Administration</td>
<td>OP-1, OP-2, OP-3</td>
</tr>
<tr>
<td>Fibrinolytic Administration Date</td>
<td>OP-1, OP-2</td>
</tr>
<tr>
<td>Fibrinolytic Administration Time</td>
<td>OP-1, OP-2</td>
</tr>
<tr>
<td>ICD-9-CM Other Diagnosis Codes</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>OP-1, OP-2, OP-3, OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>Initial ECG Interpretation</td>
<td>OP-1, OP-2</td>
</tr>
<tr>
<td>Probable Cardiac Chest Pain</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>Reason for Delay in Fibrinolytic Therapy</td>
<td>OP-1, OP-2</td>
</tr>
<tr>
<td>Reason for No Aspirin on Arrival</td>
<td>OP-4</td>
</tr>
<tr>
<td>Reason for Not Administering Fibrinolytic Therapy</td>
<td>OP-3</td>
</tr>
<tr>
<td>Transfer for Acute Coronary Intervention</td>
<td>OP-3</td>
</tr>
<tr>
<td>Troponin Order</td>
<td>OP-16</td>
</tr>
<tr>
<td>Troponin Result Date</td>
<td>OP-16</td>
</tr>
<tr>
<td>Troponin Result Time</td>
<td>OP-16</td>
</tr>
</tbody>
</table>
OP-1, OP-2, OP-3, OP-4, OP-5, and OP-16 Hospital Outpatient Emergency Department
AMI Population

Acute Myocardial Infarction
The population of the OP-1 through OP-5, and OP-16 AMI measures is identified using 5 data elements:

- E/M Code
- Discharge Status
- Outpatient Encounter Date
- Birthdate
- ICD-9-CM Principal Diagnosis Code

Patients seen in a Hospital Emergency Department (E/M Code on Appendix A OP Table 1.0) are included in the OP-1 through OP-5, and OP-16 AMI Hospital Outpatient Population and are eligible to be sampled if they have:

- Discharged / transferred to a short-term general hospital for inpatient care or to a Federal healthcare facility (Discharge Status), and
- A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 18 years, and
- An ICD-9-CM Principal Diagnosis Code for AMI defined in Appendix A, OP Table 1.1.
AMI Hospital Outpatient Population Algorithm  
(OP-1 through OP-5, and OP-16)

Variable Key:  
Patient Age on Outpatient Encounter Date  
OP Population Reject Case Flag

Process all cases that have successfully reached the point in  
the Data Processing Flow which calls this Initial Patient  
Population Algorithm. Do not process cases that have been  
rejected before this point in the Data Processing Flow

E/M Code

On OP Table 1.0  
(Appendix A)

Discharge Status

Not on OP Table 1.0  
(Appendix A)

Note: To calculate age must use the month and day portion of the  
outpatient encounter date and birthdate to yield the most accurate  
age.

Patient Age on Outpatient Encounter Date (in years) =  
Outpatient Encounter Date minus Birthdate

< 18 years

> = 18 years

ICD-9-CM Principal Diagnosis Code

Not on OP Table 1.1  
(Appendix A)

On OP Table 1.1  
(Appendix A)

Patient Age on Outpatient Encounter Date

= 01, 03, 04, 05, 06, 07, 09,  
20, 21, 41, 50, 51, 61, 62, 63  
64, 65, 66, 70

Patient is in AMI Hospital Outpatient measure Population  
for OP-1 through OP-5, and OP-16

Patient is not in AMI Hospital Outpatient measure Population  
for OP-1 through OP-5, and OP-16

Patient is eligible to be sampled for AMI Hospital  
Outpatient Measure Set

Patient is not eligible to be sampled for AMI Hospital  
Outpatient Measure Set

Set OP Population Reject Case Flag = "No"

Set OP Population Reject Case Flag = "Yes"

Start AMI Hospital Outpatient Measure Set Population Logic  
(cases eligible for OP-1 through OP-5 and OP-16)

Start

Note: For information concerning sample size requirements for  
Outpatient AMI, refer to the Population and Sampling  
Specifications section in this manual.

Return to Data Processing Flow  
(Data Transmission section)  
End

Return to Data Processing Flow (Data Transmission section)
Algorithm Narrative for AMI Hospital Outpatient Population
(OP-1 through OP-5, and OP-16)

1. **Start AMI Hospital Outpatient Measure Set Population logic (cases eligible for OP-1 through OP-5, and OP-16).**

2. **Start processing all cases that have successfully reached the point in the Data Processing Flow which call this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Data Processing Flow.**

3. **Check E and M Code.**
   a. If E and M Code is not on Appendix A, OP Table 1.0, Patient is Not in the Outpatient AMI Population. Patient is not in AMI Hospital Outpatient Measure Population for OP-1 through OP-5, and OP-16. Patient is not eligible to be sampled for AMI Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If E and M Code is on Appendix A, OP Table 1.0, continue processing and proceed to Discharge Status.

4. **Check Discharge Status.**
   a. If Discharge Status equals 01, 03, 04, 05, 06, 07, 09, 20, 21, 41, 50, 51, 61, 62, 63, 64, 65, 66, or 70, Patient is Not in the Outpatient AMI Population. Patient is not in AMI Hospital Outpatient Measure Population for OP-1 through OP-5, and OP-16. Patient is not eligible to be sampled for AMI Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If Discharge Status equals 02 or 43 continue processing and proceed to Patient Age on Outpatient Encounter Date.

5. **Calculate Patient Age on Outpatient Encounter Date.** Patient age, in years, is equal to the Outpatient Encounter Date minus the Birthdate. Use the month and day portion of the Outpatient Encounter Date and the Birthdate to yield the most accurate age.

6. **Check Patient Age.**
   a. If patient age is less than 18 years, Patient is Not in the Outpatient AMI Population. Patient is not in AMI Hospital Outpatient Measure Population for OP-1 through OP-5, and OP-16. Patient is not eligible to be sampled for AMI Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If patient age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

7. **Check ICD-9-CM Principal Diagnosis Code.**
   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, Patient is Not in the Outpatient AMI Population, Patient is not in AMI Hospital Outpatient Measure Population for OP-1 through OP-5, and OP-16. Patient is not eligible to be sampled for AMI Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, Patient is in AMI Hospital Outpatient Measure Population for OP-1 through OP-5, and OP-16. Patient is eligible to be sampled for AMI Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to NO. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction

Measure ID#: OP-1

Outpatient Setting: Emergency Department

Performance Measure Name: Median Time to Fibrinolysis

Description: Median time from emergency department arrival to administration of fibrinolytic therapy in ED patients with ST-segment elevation or left bundle branch block (LBBB) on the electrocardiogram (ECG) performed closest to ED arrival and prior to transfer.

Rationale: Time to fibrinolytic therapy is a strong predictor of outcome in patients with an acute myocardial infarction. Nearly 2 lives per 1,000 patients are lost per hour of delay (Fibrinolytic Therapy Trialists’ Collaborative Group, 1994). National guidelines recommend that fibrinolytic therapy be given within 30 minutes of hospital arrival in patients with ST-segment elevation myocardial infarction (Antman, 2004).

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from emergency department arrival to administration of fibrinolytic therapy in AMI patients with ST-segment elevation or LBBB on the ECG performed closest to ED arrival and prior to transfer.

Included Populations:
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and
- Patients discharged/transferred to a short-term general hospital for inpatient care, or to a Federal healthcare facility, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1, and
- ST-segment elevation or LBBB on the ECG performed closest to ED arrival, and
- Fibrinolytic Administration as defined in the Data Dictionary

Excluded Populations:
- Patients less than 18 years of age
- Patients who did not receive Fibrinolytic Administration within 30 minutes and had a Reason for Delay in Fibrinolytic Therapy
Data Elements:
- Arrival Time
- Birthdate
- Discharge Status
- E/M Code
- Fibrinolytic Administration
- Fibrinolytic Administration Date
- Fibrinolytic Administration Time
- ICD-9-CM Principal Diagnosis Code
- Initial ECG Interpretation
- Outpatient Encounter Date
- Reason for Delay in Fibrinolytic Therapy

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: The median time to fibrinolysis should be analyzed in conjunction with the measure rate for fibrinolysis received within 30 minutes of emergency department arrival (OP-2). These measures, used together, will assist in understanding the median time to fibrinolysis and will identify the number of AMI patients that are receiving fibrinolysis within 30 minutes of emergency department arrival and potential opportunities for improvement to decrease the median time to fibrinolysis.

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate measure of central tendency
Selected References:


**OP-1: Median Time to Fibrinolysis**

**Continuous Variable Statement:** Time (in minutes) from emergency department arrival to administration of fibrinolytic therapy in AMI patients with ST-segment elevation or LBBB on the ECG performed closest to ED arrival and prior to transfer.

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**Note:** There will be no category assignment E for this measure because it is a continuous variable.
Algorithm Narrative for OP-1: Median Time to Fibrinolysis

**Continuous Variable Statement:** Time (in minutes) from emergency department arrival to administration of fibrinolytic therapy in AMI patients with ST-segment elevation or LBBB on the ECG performed closest to ED arrival and prior to transfer.

1. Start. Run cases that are included in the AMI Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure. Proceed to Initial ECG Interpretation.

2. Check Initial ECG Interpretation.
   a. If Initial ECG Interpretation is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Initial ECG Interpretation equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Initial ECG Interpretation equals YES, the case will proceed to Fibrinolytic Administration.

3. Check Fibrinolytic Administration.
   a. If Fibrinolytic Administration is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Fibrinolytic Administration equals YES, the case will proceed to Fibrinolytic Administration Date and Time.

4. Check Fibrinolytic Administration Date.
   a. If Fibrinolytic Administration Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If Fibrinolytic Administration Date equals Non-UTD Value, the case will proceed to Fibrinolytic Administration Time.

5. Check Fibrinolytic Administration Time.
   a. If Fibrinolytic Administration Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If Fibrinolytic Administration Time equals Non-UTD Value, the case will proceed to Arrival Time.
6. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value calculation.

7. Calculate the Measurement Value. Time in minutes is equal to the Fibrinolytic Administration Date and Fibrinolytic Administration Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

8. Check Measurement Value.
   a. If Measurement Value is greater than or equal to 0 minutes and less than or equal to 30 minutes, the case will proceed to a Measure Category Assignment of D. Stop processing case.
   b. If Measurement Value is less than 0 minutes or greater than 360 minutes, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Measurement Value is greater than 30 minutes and less than or equal to 360 minutes, the case will proceed to Reason for Delay in Fibrinolytic Therapy.

9. Check Reason for Delay in Fibrinolytic Therapy.
   a. If Reason for Delay in Fibrinolytic Therapy is missing, the case will proceed to a Measure Category Assignment of X and the case will be rejected. Stop processing case.
   b. If Reason for Delay in Fibrinolytic Therapy equals YES, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Reason for Delay in Fibrinolytic Therapy equals NO, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction

Measure ID#: OP-2

Outpatient Setting: Emergency Department

Performance Measure Name: Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival

Description: Emergency Department acute myocardial infarction (AMI) patients with ST-segment elevation or LBBB on the ECG closest to arrival time receiving fibrinolytic therapy during the ED stay and having a time from ED arrival to fibrinolysis of 30 minutes or less.

Rationale: Time to fibrinolytic therapy is a strong predictor of outcome in patients with an acute myocardial infarction. Nearly 2 lives per 1,000 patients are lost per hour of delay (Fibrinolytic Therapy Trialists’ Collaborative Group, 1994). National guidelines recommend that fibrinolytic therapy be given within 30 minutes of hospital arrival in patients with ST-segment elevation myocardial infarction (Antman, 2004).

Type of Measure: Process

Improvement Noted as: An increase in the rate

Numerator Statement: Emergency Department AMI patients whose time from ED arrival to fibrinolysis is 30 minutes or less.

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:
- Arrival Time
- Fibrinolytic Administration Date
- Fibrinolytic Administration Time
- Outpatient Encounter Date

Denominator Statement: Emergency Department AMI patients with ST-segment elevation or LBBB on ECG who received fibrinolytic therapy.

Included Populations:
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and
- Patients discharged/transfered to a short-term general hospital for inpatient care, or to a Federal healthcare facility, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1, and
- ST-segment elevation or LBBB on the ECG performed closest to ED arrival, and
- Fibrinolytic Administration

Excluded Populations:
- Patients less than 18 years of age
- Patients who did not receive Fibrinolytic Administration within 30 minutes AND had a Reason for Delay in Fibrinolytic Therapy

Data Elements:
- Birthdate
- Discharge Status
- E/M Code
- Fibrinolytic Administration
- ICD-9-CM Principal Diagnosis Code
- Initial ECG Interpretation
- Reason for Delay in Fibrinolytic Therapy

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: The measure rate for fibrinolytic agent received within 30 minutes of emergency department arrival should be analyzed in conjunction with the ED median time to fibrinolysis measure (OP-1). These measures, used together, will assist in understanding the number of AMI patients that are receiving fibrinolysis within 30 minutes of emergency department arrival and will identify the emergency department’s median time to fibrinolysis and potential opportunities for improvement to increase the rate of patients receiving fibrinolysis in 30 minutes or less.

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported as: Aggregate rate generated from count data reported as a proportion
Selected References:


OP-2: ED Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival

**Numerator:** Emergency Department AMI patients whose time from ED arrival to fibrinolysis is 30 minutes or less

**Denominator:** Emergency Department AMI patients with ST-segment elevation or LBBB on ECG who received fibrinolytic therapy.

---

**Variable Key:**

- Time to Fibrinolysis
  - Time to Fibrinolysis = Fibrinolytic Administration Date and Fibrinolytic Administration Time minus Outpatient Encounter Date and Arrival Time (in minutes)

---

**Flowchart Description:**

1. **START**
2. Run cases that are included in the AMI Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure.
3. Initial ECG Interpretation
   - Y
   - N → OP-2 B
4. Fibrinolytic Administration
   - Y
   - N → OP-2 B
5. Fibrinolytic Administration Date
   - UTD
6. Fibrinolytic Administration Time
   - UTD
7. Arrival Time
   - UTD
8. Non-UTD Value
9. Time to Fibrinolysis
   - > or = 0 minutes and < or = 30 minutes → In Numerator Population
   - < 0 minutes or > 360 minutes → Not In Measure Population
10. Reason for Delay in Fibrinolytic Therapy
    - Y
    - N → OP-2 Z
11. Case Will Be Rejected
12. STOP
Algorithm Narrative for OP-2:
ED Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival

**Numerator:** Emergency Department AMI patients whose time from ED arrival to fibrinolysis is 30 minutes or less.

**Denominator:** Emergency Department AMI patients with ST-segment elevation or LBBB on ECG who received fibrinolytic therapy.

1. Start. Run all cases that are included in the AMI Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure. Proceed to Initial ECG Interpretation.

2. Check Initial ECG Interpretation.
   a. If Initial ECG Interpretation is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Initial ECG Interpretation equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Initial ECG Interpretation equals YES, the case will proceed to Fibrinolytic Administration.

3. Check Fibrinolytic Administration.
   a. If Fibrinolytic Administration is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Fibrinolytic Administration equals YES, the case will proceed to Fibrinolytic Administration Date and Time.

4. Check Fibrinolytic Administration Date.
   a. If Fibrinolytic Administration Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration Date equals UTD, the case will proceed to a Measure Category Assignment of D. Stop processing case.
   c. If Fibrinolytic Administration Date equals Non-UTD Value, the case will proceed to Fibrinolytic Administration Time.

5. Check Fibrinolytic Administration Time.
   a. If Fibrinolytic Administration Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
b. If Fibrinolytic Administration Time equals UTD, the case will proceed to a Measure Category Assignment of D. Stop processing case.

c. If Fibrinolytic Administration Time equals Non-UTD Value, the case will proceed to Arrival Time.

6. Check Arrival Time.

a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of D. Stop processing case.

b. If Arrival Time equals Non-UTD Value, the case will proceed to Time to Fibrinolysis calculation.

7. Calculate the Time to Fibrinolysis. Time in minutes is equal to the Fibrinolytic Administration Date and Fibrinolytic Administration Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

8. Check the Time to Fibrinolysis.

a. If Time to Fibrinolysis is greater than or equal to 0 minutes and less than or equal to 30 minutes, the case will proceed to a Measure Category Assignment of E. Stop processing case.

b. If Time to Fibrinolysis is less than 0 minutes or greater than 360 minutes, the case will proceed to a Measure Category Assignment of B. Stop processing case.

c. If Time to Fibrinolysis is greater than 30 minutes and less than or equal to 360 minutes, the case will proceed to Reason for Delay in Fibrinolytic Therapy.

9. Check Reason for Delay in Fibrinolytic Therapy.

a. If Reason for Delay in Fibrinolytic Therapy is missing, the case will proceed to a Measure Category Assignment of X and the case will be rejected. Stop processing case.

b. If Reason for Delay in Fibrinolytic Therapy equals YES, the case will proceed to a Measure Category Assignment of B. Stop processing case.

c. If Reason for Delay in Fibrinolytic Therapy equals NO, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction

Measure ID #: OP-3

Outpatient Setting: Emergency Department

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Performance Measure Name</th>
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</thead>
<tbody>
<tr>
<td>OP-3a</td>
<td>Median Time to Transfer to Another Facility for Acute Coronary Intervention – Overall Rate</td>
</tr>
<tr>
<td>OP-3b</td>
<td>Median Time to Transfer to Another Facility for Acute Coronary Intervention – Reporting Measure</td>
</tr>
<tr>
<td>OP-3c</td>
<td>Median Time to Transfer to Another Facility for Acute Coronary Intervention – Quality Improvement Measure</td>
</tr>
</tbody>
</table>

Performance Measure Name: Median Time to Transfer to Another Facility for Acute Coronary Intervention

Description: Median time from emergency department arrival to time of transfer to another facility for acute coronary intervention

Rationale: The early use of primary angioplasty in patients with ST-segment myocardial infarction (STEMI) results in a significant reduction in mortality and morbidity. The earlier primary coronary intervention is provided, the more effective it is (Brodie, 1998 and DeLuca, 2004). National guidelines recommend the prompt initiation of percutaneous coronary intervention (PCI) in patients presenting with ST-segment elevation myocardial infarction (Antman, 2004). Patients transferred for primary PCI rarely meet recommended guidelines for door-to-balloon time (Nallamothu, 2005). Times to treatment in transfer patients undergoing primary PCI may influence the use of PCI as an intervention (Nallamothu, 2005). Current recommendations support a door-to-balloon time of 90 minutes or less (Krumholz, 2008).

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from emergency department arrival to transfer to another facility for acute coronary intervention.

Included Populations:

- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and
- Patients discharged/transferred to a short-term general hospital for inpatient care, or to a Federal healthcare facility, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1, and
• ST-segment elevation or LBBB on the ECG performed closest to ED arrival, and
• Patients with Transfer for Acute Coronary Intervention

Excluded Populations:
• Patients less than 18 years of age
• Patients receiving Fibrinolytic Administration

Data Elements:
• Arrival Time
• Birthdate
• Discharge Status
• ED Departure Date
• ED Departure Time
• E/M Code
• Fibrinolytic Administration
• ICD-9-CM Principal Diagnosis Code
• Initial ECG Interpretation
• Outpatient Encounter Date
• Reason for Not Administering Fibrinolytic Therapy
• Transfer for Acute Coronary Intervention

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate measure of central tendency.
Selected References:


**OP-3: Median Time to Transfer to Another Facility for Acute Coronary Intervention**

**Continuous Variable Statement:** Time (in minutes) from emergency department arrival to transfer to another facility for acute coronary intervention

**Measurement Value** = ED Departure Date and ED Departure Time minus Outpatient Encounter Date and Arrival Time (in minutes)

**Flowchart Description:**
- Run cases that are included in the AMI Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure.
- Initial ECG Interpretation:
  - If Initial ECG Interpretation = Y, proceed to Fibrinolytic Administration.
  - If Initial ECG Interpretation = N, proceed to Transfer for Acute Coronary Intervention.
- Fibrinolytic Administration:
  - If Fibrinolytic Administration = Y, proceed to ED Departure Date.
  - If Fibrinolytic Administration = N, complete the process.
- Transfer for Acute Coronary Intervention:
  - If Transfer for Acute Coronary Intervention = 2, 3, complete the process.
- ED Departure Date:
  - If ED Departure Date = UTD, proceed to ED Departure Time.
  - If ED Departure Date ≠ UTD, complete the process.
- ED Departure Time:
  - If ED Departure Time = UTD, proceed to Arrival Time.
  - If ED Departure Time ≠ UTD, complete the process.
- Arrival Time:
  - If Arrival Time = UTD, complete the process.
  - If Arrival Time ≠ UTD, complete the process.
- If all values are UTD, complete the process.
- If any value is missing, complete the process.
- Final Decision:
  - If all values are UTD, the process is completed.
  - If any value is not UTD, the process is not completed.
Note: There will be no category assignment E for this measure because it is a continuous variable.

**Note:**
- Initialize the Measure Category Assignment for OP-3b and OP-3c = 'B'.
- Do not change the Measure Category Assignment that was already calculated for the overall rate (OP-3a).
Algorithm Narrative for OP-3: Median Time to Transfer to Another Facility for Acute Coronary Intervention

Continuous Variable Statement: Time (in minutes) from emergency department arrival to transfer to another facility for acute coronary intervention.

1. Start. Run all cases that are included in the AMI Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure. Proceed to Initial ECG Interpretation.

2. Check Initial ECG Interpretation.
   a. If Initial ECG Interpretation is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Initial ECG Interpretation equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Initial ECG Interpretation equals YES, the case will proceed to Fibrinolytic Administration.

3. Check Fibrinolytic Administration.
   a. If Fibrinolytic Administration is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Fibrinolytic Administration equals YES, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Fibrinolytic Administration equals NO, the case will proceed to Transfer for Acute Coronary Intervention.

4. Check Transfer for Acute Coronary Intervention.
   a. If Transfer for Acute Coronary Intervention is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Transfer for Acute Coronary Intervention equals 2 or 3, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Transfer for Acute Coronary Intervention equals 1, the case will proceed to Discharge Date and Time.

5. Check ED Departure Date.
   a. If ED Departure Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ED Departure Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ED Departure Date equals Non-UTD Value, the case will proceed to ED Departure Time.
6. Check ED Departure Time.
   a. If ED Departure Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ED Departure Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ED Departure Time equals Non-UTD Value, the case will proceed to Arrival Time.

7. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to the Measurement Value calculation.

8. Calculate the Measurement Value. Time in minutes is equal to the ED Departure Date and ED Departure Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

9. Check the Measurement Value.
   a. If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Measurement Value is greater than or equal to 0 minutes the case will proceed to Reason for Not Administering Fibrinolytic Therapy.

10. Check Reason for Not Administering Fibrinolytic Therapy.
    a. If Reason for Not Administering Fibrinolytic Therapy is missing, the case will proceed to a Measure Category Assignment of X and the case will be rejected. Stop processing case.
    b. If Reason for Not Administering Fibrinolytic Therapy equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of D1, the OP-3a Overall Rate. Initialize the Measure Category Assignment for OP-3b and OP-3c equal to B. Do not change the Measure Category Assignment that was already calculated for the overall rate of OP-3a. Proceed to Reason for Not Administering Fibrinolytic Therapy.

11. Check Reason for Not Administering Fibrinolytic Therapy.
    a. If Reason for Not Administering Fibrinolytic Therapy equals 1 or 2, the case will proceed to a Measure Category Assignment of D2, the OP-3c Quality Improvement Rate. Stop processing case.
    b. If Reason for Not Administering Fibrinolytic Therapy equals 3, the case will proceed to a Measure Category Assignment of D, the OP-3b Reporting Rate. Stop processing case.
Measure Information Form

**Measure Set:** Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

**Measure ID#:** OP-4

**Outpatient Setting:** Emergency Department

**Performance Measure Name:** Aspirin at Arrival

**Description:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.


**Type of Measure:** Process

**Improvement Noted As:** An increase in the rate

**Numerator Statement:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

- **Included Populations:** Not Applicable
- **Excluded Populations:** None

**Data Elements:**
- Aspirin Received

**Denominator Statement:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain)

- **Included Populations:**
  - An E/M Code for emergency department encounter as defined in Appendix A, Table 1.0, and
Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and
An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain

Excluded Populations:
- Patients less than 18 years of age
- Patients with a documented Reason for No Aspirin on Arrival

Data Elements:
- Birthdate
- Discharge Status
- E/M Code
- ICD-9-CM Other Diagnosis Codes
- ICD-9-CM Principal Diagnosis Code
- Outpatient Encounter Date
- Probable Cardiac Chest Pain
- Reason for No Aspirin on Arrival

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section. Sampling requirements apply to each distinct hospital outpatient measure set (AMI and Chest Pain).

Data Reported As: Aggregate rate generated from count data reported as a proportion.
Selected References:


OP-4: Aspirin at Arrival

**Numerator:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

**Denominator:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

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Algorithm Narrative for OP-4: Aspirin at Arrival

Numerator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

Denominator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

1. Start. Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithm and passed the edit defined in the Data Processing Flow through this measure. Proceed to ICD-9-CM Principal Diagnosis Code.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain.
   b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to Aspirin Received.

3. Check Probable Cardiac Chest Pain.
   a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Probable Cardiac Chest Pain equals YES, the case will proceed to Aspirin Received.

4. Check Aspirin Received.
   a. If Aspirin Received is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Aspirin Received equals NO, the case will proceed to Reason for No Aspirin on Arrival.
   c. If Aspirin Received equals YES, the case will proceed to a Measure Category Assignment of E. Stop processing case.

5. Check Reason for No Aspirin on Arrival.
   a. If Reason for No Aspirin on Arrival is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Reason for No Aspirin on Arrival equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of B. Stop processing case.

6. If Reason for No Aspirin on Arrival equals 4, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

Measure ID#: OP-5

Outpatient Setting: Emergency Department

Performance Measure Name: Median Time to ECG

Description: Median time from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain).

Rationale: Guidelines recommend patients presenting with chest discomfort or symptoms suggestive of ST-segment elevation myocardial infarction (STEMI) have a 12-lead electrocardiogram (ECG) performed within a target of 10 minutes of emergency department arrival (Krumholz, 2008). Evidence supports reperfusion benefits patients with identified STEMI (Antman 2004). The diagnosis and management of STEMI patients is dependent upon practices within the emergency department. Timely ECGs assist in identifying STEMI patients and impact the choice of reperfusion strategy (Peacock, 2007). This measure will identify the median time to ECG for chest pain or AMI patients and potential opportunities for improvement to decrease the median time to ECG.

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

Included Populations:

- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and
- Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a, and
- Patients receiving an ECG
Excluded Populations:
- Patients less than 18 years of age

Data Elements:
- Arrival Time
- Birthdate
- Discharge Status
- E/M Code
- ECG
  - ECG Date
  - ECG Time
- ICD-9-CM Other Diagnosis Codes
- ICD-9-CM Principal Diagnosis Code
- Outpatient Encounter Date
- Probable Cardiac Chest Pain

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section. Sampling requirements apply to each distinct hospital outpatient measure set (AMI and Chest Pain).

Data Reported As: Aggregate measure of central tendency
Selected References:
OP-5: ED Median Time to ECG

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with probable cardiac chest pain).

Note: There will be no category assignment E for this measure because it is a continuous variable.

Case Will Be Rejected

Measurement Value = ECG Date and ECG Time minus Outpatient Encounter Date and Arrival Time (in minutes)

Measurement Value

ECG

ECG Date

ECG Time

Non-UTD Value

ECG Date

ECG Time

Non-UTD Value

Arrival Time

Non-UTD Value

In Measure Population

In Measure Population

Measurement Value

Measurement Value

Note: There will be no category assignment E for this measure because it is a continuous variable.

ARRIVAL TIME

ECG

ECG Date

ECG TIME

Missing

ECG Date

ECG Time

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ECG Time
Algorithm Narrative for OP-5: ED Median Time to ECG

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain).

1. Start. Run all cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithm and pass the edits defined in the Data Processing Flow through this measure. Proceed to ICD-9-CM Principal Diagnosis Code.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain.
   b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to ECG.

3. Check Probable Cardiac Chest Pain.
   a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Probable Cardiac Chest Pain equals YES, the case will proceed to ECG.

4. Check ECG.
   a. If ECG is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If ECG equals YES, the case will proceed to ECG Date and Time.

5. Check ECG Date.
   a. If ECG Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ECG Date equals Non-UTD Value, the case will proceed to ECG Time.

6. Check ECG Time.
   a. If ECG Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ECG Time equals Non-UTD Value, the case will proceed to Arrival Time.
7. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value calculation.

8. Calculate the Measurement Value. Time in minutes is equal to the ECG Date and ECG Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

   a. If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

Measure ID #: OP-16

Outpatient Setting: Emergency Department

Performance Measure Name: Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) Received within 60 minutes of arrival.

Description: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for troponin during the stay and having a time from ED arrival to completion of Troponin results within 60 minutes of arrival.

Rationale:
Cardiac biomarkers are diagnostic tools to assist in the identification of myocardial necrosis (Braunwald, 2002) and essential for risk stratification of unstable angina and non-ST Elevation Myocardial Infarction and diagnosis of MI (Anderson 2007). Troponin is a cardiac biomarker used in the identification of patients experiencing acute coronary events who may be at risk for myocardial infarction or death (Gibler, 2005). Laboratory turnaround times for troponin should be under one hour (Gibler, 2005). Evaluation of timeliness of diagnostic tools used to identify patients experiencing cardiac damage has the potential to promote early intervention. This measure will identify the median time to troponin completion for chest pain or AMI patients and provide potential opportunities for improvement to decrease the times to troponin.

Both patients and clinicians are impacted by the timeliness of laboratory reporting (Howanitz, 2001). Decreasing laboratory turnaround times increases ED efficiency, specifically by decreasing diversion time and decreasing length of stay (Storrow, 2008). Decreasing the numbers of hours a day on diversion as well as decreasing patients’ length of stay in the emergency department allows for the treatment of a greater number of patients. Studies have found correlations between the length of stay and mean turnaround times (Holland, 2008). The Clinical Laboratory Improvement Amendment establishes standards and enforcement of these policies promotes improvements in the timeliness of patient test results indicating this is an important parameter of measurement (Rivers, 2005). Efficiencies in throughput with tasks can lead to less diversion, less overcrowding, less elopements and less financial loss (Falvo, 2007).

Type of Measure: Process

Improvement Noted As: An increase in the rate
**Numerator Statement:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.

**Included Populations:** Not Applicable

**Excluded Populations:** None

**Data Elements:**
- Arrival Time
- Outpatient Encounter Date
- Troponin Result Date
- Troponin Result Time

**Denominator Statement:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin.

**Included Populations:**
- Patients with a patient age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 18 years, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain, and
- Patients who had a Troponin Order, and
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0

**Excluded Populations:**
- Patients less than 18 years of age
- Patients who expired in the emergency department
- Patients who left the emergency department against medical advice or discontinued care

**Data Elements:**
- Birthdate
- Discharge Status
- E/M Code
- ICD-9-CM Other Diagnosis Code
- ICD-9-CM Principal Diagnosis Code
- Probable Cardiac Chest Pain
- Troponin Order

**Risk Adjustment:** No
Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: N/A

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion.

Suggested References:
OP-16: Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) Received within 60 minutes of arrival.

**Numerator:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.

**Denominator:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin.
Measurement Value (in minutes) = Troponin Results Date and Troponin Results Time minus Arrival Time and Outpatient Encounter Date

- Measurement Value > 60 minutes
- <= 60 minutes

In Numerator Population

In Measure Population

STOP
Algorithm Narrative for OP-16

Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) Received within 60 minutes of arrival.

Numerator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.

Denominator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin.

1. Start processing. Run cases that are included in the Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 1.1, continue processing and proceed to Troponin Order.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 1.1, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

3. Check ICD-9-CM Principal Diagnosis Code.
   a. If Principal Diagnosis Code is on Table 1.1a, continue processing and proceed to Probable Cardiac Chest Pain.
   b. If Principal Diagnosis Code is not on Table 1.1a, continue processing and proceed to ICD-9-CM Other Diagnosis Code.

   a. If the ICD-9-CM Other Diagnosis Code is not on Table 1.1a, the case will go to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Other Diagnosis Code is on Table 1.1a, continue processing and proceed to Probable Cardiac Chest Pain.

5. Check Probable Cardiac Chest Pain.
   a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Probable Cardiac Chest Pain equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Probable Cardiac Chest Pain equals Yes, continue processing and proceed to Troponin Order.
6. Check Troponin Order.
   a. If Troponin Order is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Troponin Order equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Troponin Order equals a Yes, continue processing and proceed to Troponin Results Date.

7. Check Troponin Results Date.
   a. If Troponin Results Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Troponin Results Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Troponin Results Date equals a Non Unable To Determine Value, continue processing and proceed to Troponin Results Time.

8. Check Troponin Results Time.
   a. If Troponin Results Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Troponin Results Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Troponin Results Time equals a Non Unable To Determine Value, continue processing and proceed to Arrival Time.

9. Check Arrival Time.
   a. If the Arrival Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If Arrival Time equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value Calculation.

10. Calculate Measurement Value. Measurement Value, in minutes, is equal to the Troponin Results Date and Troponin Results Time minus the Arrival Time and Outpatient Encounter Date.

11. Check Measurement Value.
    a. If the Measurement Value is greater than sixty minutes, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Stop processing.
    b. If the Measurement Value is less than or equal to sixty minutes, the case will proceed to a Measurement Category Assignment of E and will be in the Measure Population. Stop processing.
### Chest Pain (CP)

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP-4(^1)</td>
<td>Aspirin at Arrival</td>
</tr>
<tr>
<td>OP-5(^1)</td>
<td>Median Time to ECG</td>
</tr>
<tr>
<td>OP-16(^1)</td>
<td>Troponin Results Received Within 60 Minutes</td>
</tr>
</tbody>
</table>

\(^1\)Measures apply to both the AMI Population and Chest Pain Population

### OP CHEST PAIN GENERAL DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>CMS Certification Number(^1,2)</td>
<td>All Records</td>
</tr>
<tr>
<td>First Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
</tr>
<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>National Provider Identifier(^1,2)</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a Payment Source of Medicare who have a standard HIC number</td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
</tr>
<tr>
<td>Physician 1</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
<td>All Records</td>
</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

\(^1\)Transmission Data Element
\(^2\)Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual
### OP CHEST PAIN SPECIFIC DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>OP Chest Pain Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin Received</td>
<td>OP-4</td>
</tr>
<tr>
<td>Discharge Status</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>E/M Code</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>ECG</td>
<td>OP-5</td>
</tr>
<tr>
<td>ECG Date</td>
<td>OP-5</td>
</tr>
<tr>
<td>ECG Time</td>
<td>OP-5</td>
</tr>
<tr>
<td>ICD-9-CM Other Diagnosis Codes</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>Probable Cardiac Chest Pain</td>
<td>OP-4, OP-5, OP-16</td>
</tr>
<tr>
<td>Reason for No Aspirin on Arrival</td>
<td>OP-4</td>
</tr>
<tr>
<td>Troponin Order</td>
<td>OP-16</td>
</tr>
<tr>
<td>Troponin Result Date</td>
<td>OP-16</td>
</tr>
<tr>
<td>Troponin Result Time</td>
<td>OP-16</td>
</tr>
</tbody>
</table>
OP-4, OP-5, and OP-16 Hospital Outpatient CP Population

Chest Pain

The population of the OP-4, OP-5, and OP-16 Chest Pain measures is identified using 6 data elements:

- E/M Code
- Discharge Status
- Outpatient Encounter Date
- Birthdate
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Other Diagnosis Codes

Patients seen in a Hospital Emergency Department (E/M Code on Appendix A OP Table 1.0) are included in the OP-4, OP-5, and OP-16 Chest Pain Hospital Outpatient Population and are eligible to be sampled if they have:

- Discharged / transferred to a short-term general hospital for inpatient care, or to a Federal healthcare facility (Discharge Status), and
- A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 18 years, and
- An ICD-9-CM Principal or Other Diagnosis Codes for Chest Pain as defined in Appendix A, OP Table 1.1a.

Patients with an ICD-9-CM Principal Diagnosis Code for AMI are not eligible for the Chest Pain Hospital Outpatient Population.
Chest Pain Hospital Outpatient Population Algorithm (OP-4, OP-5 and OP-16)

Start Chest Pain Outpatient Measure Set Population Logic (cases eligible for OP-4, OP-5 and OP-16)

Process all cases that have successfully reached the point in the Data Processing Flow which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Data Processing Flow.

Variable Key:
- Patient Age on Outpatient Encounter Date
- OP Population Reject Case Flag

**Start**

1. **E/M Code**
   - On OP Table 1.0 (Appendix A)
   - Not on OP Table 1.0 (Appendix A)

2. **Discharge Status**
   - Not on OP Table 1.1a (Appendix A)
   - On OP Table 1.1a (Appendix A)

3. **Patient Age on Outpatient Encounter Date**
   - < 18 years
   - >= 18 years

4. **ICD-9-CM Principal Diagnosis Code**
   - Valid
   - Missing

5. **ICD-9-CM Other Diagnosis Code**
   - Valid
   - Missing

6. **ICD-9-CM Principal Diagnosis Code**
   - Not on OP Table 1.1a (Appendix A)
   - On OP Table 1.1a (Appendix A)

7. **Patient is in the Chest Pain Hospital Outpatient Population**
   - Patient is eligible to be sampled for the Chest Pain Hospital Outpatient measures (OP-4, OP-5 and OP-16)
   - Set OP Population Reject Case Flag = "No"

8. **Patient Not in Outpatient Chest Pain Population**
   - Patient not in the Chest Pain Hospital Outpatient measure Population (OP-4, OP-5 and OP-16)
   - Set OP Population Reject Case Flag = "Yes"

**Note:** To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

**Return to Data Processing Flow** (Data Transmission section) **End**

**Patient Age on **
**Outpatient **
**Encounter Date (in years) = 
Outpatient Encounter Date minus Birthdate**

**Note:** For information concerning sample size requirements for Outpatient CP, refer to the Population and Sampling Specifications section in this manual.
Algorithm Narrative for Chest Pain Hospital Outpatient Population  
(OP-4, OP-5 and OP-16)


2. Start processing all cases that have successfully reached the point in the Data Processing Flow which call this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Data Processing Flow.

3. Check E and M Code.
   a. If E and M Code is not on Appendix A, OP Table 1.0, Patient is Not in the Outpatient Chest Pain Population. Patient is not in Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5, and OP-16. Patient is not eligible to be sampled for Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If E and M Code is on Appendix A, OP Table 1.0, continue processing and proceed to Discharge Status.

4. Check Discharge Status.
   a. If Discharge Status equals 01, 03, 04, 05, 06, 07, 09, 20, 21, 41, 50, 51, 61, 62, 63, 64, 65, 66, or 70, Patient is Not in the Outpatient Chest Pain Population. Patient is not in Chest Pain Hospital Outpatient Measure Population for OP-4 OP-5 and OP-16. Patient is not eligible to be sampled for Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If Discharge Status equals 02 or 43 continue processing and proceed to Patient Age on Outpatient Encounter Date.

5. Calculate Patient Age on Outpatient Encounter Date. Patient age, in years, is equal to the Outpatient Encounter Date minus the Birthdate. Use the month and day portion of the Outpatient Encounter Date and the Birthdate to yield the most accurate age.

6. Check Patient Age.
   a. If patient age is less than 18 years, Patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is not eligible to be sampled for Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If patient age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.
7. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is missing, Patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If the ICD-9-CM Principal Diagnosis Code is valid and not missing, proceed to ICD-9-CM Principal Diagnosis Code.

   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1a, proceed to ICD-9-CM Other Diagnosis Code.
   b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1a, Patient is in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to NO. Stop processing case.

   a. If the ICD-9-CM Other Diagnosis Code is not on Appendix A, OP Table 1.1a, Patient is Not in the Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
   b. If the ICD-9-CM Other Diagnosis Code is on Appendix A, OP Table 1.1a, proceed to ICD-9-CM Principal Diagnosis Code.

    a. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, Patient is Not in the Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to YES. Stop processing case.
    b. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, Patient is in the Chest Pain Hospital Outpatient Measure Population for OP-4, OP-5 and OP-16. Patient is eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to NO. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

Measure ID#: OP-4

Outpatient Setting: Emergency Department

Performance Measure Name: Aspirin at Arrival

Description: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.


Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:
- Aspirin Received

Denominator Statement: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain)

Included Populations:
- An E/M Code for emergency department encounter as defined in Appendix A, Table 1.0, and
Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and

An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain

Excluded Populations:
- Patients less than 18 years of age
- Patients with a documented Reason for No Aspirin on Arrival

Data Elements:
- Birthdate
- Discharge Status
- E/M Code
- ICD-9-CM Other Diagnosis Codes
- ICD-9-CM Principal Diagnosis Code
- Outpatient Encounter Date
- Probable Cardiac Chest Pain
- Reason for No Aspirin on Arrival

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section. Sampling requirements apply to each distinct hospital outpatient measure set (AMI and Chest Pain).

Data Reported As: Aggregate rate generated from count data reported as a proportion.
Selected References:


**OP-4: Aspirin at Arrival**

**Numerator:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

**Denominator:** Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

---

START

Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithm and passed the edit defined in the Data Processing Flow through this measure.

---

ICD-9-CM Principal Diagnosis Code

Not On OP Table 1.1 (Appendix A)

Missing

Probable Cardiac Chest Pain

On OP Table 1.1 (Appendix A)

Aspirin Received

Missing

Reason for No Aspirin on Arrival

- 1, 2, or 3

Not In Measure Population

- Y

Case Will Be Rejected

STOP

---

In Numerator Population

- N

In Measure Population

- 4

- Y

- N

X

B

E

D

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z
Algorithm Narrative for OP-4: Aspirin at Arrival

Numerator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer.

Denominator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

1. Start. Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and passed the edit defined in the Data Processing Flow through this measure. Proceed to ICD-9-CM Principal Diagnosis Code.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain.
   b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to Aspirin Received.

3. Check Probable Cardiac Chest Pain.
   a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Probable Cardiac Chest Pain equals YES, the case will proceed to Aspirin Received.

4. Check Aspirin Received.
   a. If Aspirin Received is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Aspirin Received equals NO, the case will proceed to Reason for No Aspirin on Arrival.
   c. If Aspirin Received equals YES, the case will proceed to a Measure Category Assignment of E. Stop processing case.

5. Check Reason for No Aspirin on Arrival.
   a. If Reason for No Aspirin on Arrival is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Reason for No Aspirin on Arrival equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of B. Stop processing case.

6. If Reason for No Aspirin on Arrival equals 4, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

Measure ID#: OP-5

Outpatient Setting: Emergency Department

Performance Measure Name: Median Time to ECG

Description: Median time from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain).

Rationale: Guidelines recommend patients presenting with chest discomfort or symptoms suggestive of ST-segment elevation myocardial infarction (STEMI) have a 12-lead electrocardiogram (ECG) performed within a target of 10 minutes of emergency department arrival (Krumholz, 2008). Evidence supports reperfusion benefits patients with identified STEMI (Antman 2004). The diagnosis and management of STEMI patients is dependent upon practices within the emergency department. Timely ECGs assist in identifying STEMI patients and impact the choice of reperfusion strategy (Peacock, 2007). This measure will identify the median time to ECG for chest pain or AMI patients and potential opportunities for improvement to decrease the median time to ECG.

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for AMI or Chest Pain patients (with Probable Cardiac Chest Pain).

Included Populations:

- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and
- Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a, and
- Patients receiving an ECG
Excluded Populations:
- Patients less than 18 years of age

Data Elements:
- Arrival Time
- Birthdate
- Discharge Status
- E/M Code
- ECG
- ECG Date
- ECG Time
- ICD-9-CM Other Diagnosis Codes
- ICD-9-CM Principal Diagnosis Code
- Outpatient Encounter Date
- Probable Cardiac Chest Pain

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section. Sampling requirements apply to each distinct hospital outpatient measure set (AMI and Chest Pain).

Data Reported As: Aggregate measure of central tendency
Selected References:


OP-5: ED Median Time to ECG

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with probable cardiac chest pain).

Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and pass the edits defined in the Data Processing Flow through this measure.

**Note:** There will be no category assignment E for this measure because it is a continuous variable.
Algorithm Narrative for OP-5: ED Median Time to ECG

Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain).

1. Start. Run all cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and pass the edits defined in the Data Processing Flow through this measure. Proceed to ICD-9-CM Principal Diagnosis Code.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain.
   b. If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to ECG.

3. Check Probable Cardiac Chest Pain.
   a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If Probable Cardiac Chest Pain equals YES, the case will proceed to ECG.

4. Check ECG.
   a. If ECG is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG equals NO, the case will proceed to a Measure Category Assignment of B. Stop processing case.
   c. If ECG equals YES, the case will proceed to ECG Date and Time.

5. Check ECG Date.
   a. If ECG Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ECG Date equals Non-UTD Value, the case will proceed to ECG Time.

6. Check ECG Time.
   a. If ECG Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If ECG Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   c. If ECG Time equals Non-UTD Value, the case will proceed to Arrival Time.
7. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value calculation.

8. Calculate the Measurement Value. Time in minutes is equal to the ECG Date and **ECG** Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

   a. If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Acute Myocardial Infarction and Hospital Outpatient Chest Pain

Measure ID #: OP-16

Outpatient Setting: Emergency Department

Performance Measure Name: Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) Received within 60 minutes of arrival.

Description: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for troponin during the stay and having a time from ED arrival to completion of Troponin results within 60 minutes of arrival.

Rationale:
Cardiac biomarkers are diagnostic tools to assist in the identification of myocardial necrosis (Braunwald, 2002) and essential for risk stratification of unstable angina and non-ST Elevation Myocardial Infarction and diagnosis of MI (Anderson 2007). Troponin is a cardiac biomarker used in the identification of patients experiencing acute coronary events who may be at risk for myocardial infarction or death (Gibler, 2005). Laboratory turnaround times for troponin should be under one hour (Gibler, 2005). Evaluation of timeliness of diagnostic tools used to identify patients experiencing cardiac damage has the potential to promote early intervention. This measure will identify the median time to troponin completion for chest pain or AMI patients and provide potential opportunities for improvement to decrease the times to troponin.

Both patients and clinicians are impacted by the timeliness of laboratory reporting (Howanitz, 2001). Decreasing laboratory turnaround times increases ED efficiency, specifically by decreasing diversion time and decreasing length of stay (Storrow, 2008). Decreasing the numbers of hours a day on diversion as well as decreasing patients’ length of stay in the emergency department allows for the treatment of a greater number of patients. Studies have found correlations between the length of stay and mean turnaround times (Holland, 2008). The Clinical Laboratory Improvement Amendment establishes standards and enforcement of these policies promotes improvements in the timeliness of patient test results indicating this is an important parameter of measurement (Rivers, 2005). Efficiencies in throughput with tasks can lead to less diversion, less overcrowding, less elopements and less financial loss (Falvo, 2007).

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.
Included Populations: Not Applicable

Excluded Populations: None

Data Elements:
- Arrival Time
- Outpatient Encounter Date
- Troponin Result Date
- Troponin Result Time

Denominator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) patients with an order for Troponin.

Included Populations:
- Patients with a patient age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 18 years, and
- An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain, and
- Patients who had a Troponin Order, and
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0

Excluded Populations:
- Patients less than 18 years of age
- Patients who expired in the emergency department
- Patients who left the emergency department against medical advice or discontinued care

Data Elements:
- Birthdate
- Discharge Status
- E/M Code
- ICD-9-CM Other Diagnosis Code
- ICD-9-CM Principal Diagnosis Code
- Probable Cardiac Chest Pain
- Troponin Order

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: N/A
Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion.

Suggested References:
OP-16: Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) Received within 60 minutes of arrival.

**Numerator:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.

**Denominator:** Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) with an order for Troponin.

Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and pass the edits defined in the Data Processing Flow through this measure.
**Measurement Value** (in minutes) = *Troponin Results Date and Troponin Results Time minus Arrival Time and Outpatient Encounter Date*

- In Numerator Population
- **STOP**
Algorithm Narrative for OP-16
Troponin Results for Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Provable Cardiac Chest Pain) Received within 60 minutes of arrival.

Numerator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Provable Cardiac Chest Pain) with an order for Troponin whose time from ED arrival to completion of Troponin results is within 60 minutes of arrival.

Denominator Statement: Emergency Department acute myocardial infarction (AMI) patients or chest pain patients (with Provable Cardiac Chest Pain) patients with an order for Troponin.

1. Start processing. Run cases that are included in the Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.

2. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 1.1, continue processing and proceed to Troponin Order.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 1.1, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

3. Check ICD-9-CM Principal Diagnosis Code.
   a. If Principal Diagnosis Code is on Table 1.1a, continue processing and proceed to Provable Cardiac Chest Pain.
   b. If Principal Diagnosis Code is not on Table 1.1a, continue processing and proceed to ICD-9-CM Other Diagnosis Code.

   a. If the ICD-9-CM Other Diagnosis Code is not on Table 1.1a, the case will go to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Other Diagnosis Code is on Table 1.1a, continue processing and proceed to Provable Cardiac Chest Pain.

5. Check Provable Cardiac Chest Pain.
   a. If Provable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Provable Cardiac Chest Pain equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Provable Cardiac Chest Pain equals Yes, continue processing and proceed to Troponin Order.
6. Check Troponin Order.
   a. If Troponin Order is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Troponin Order equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Troponin Order equals a Yes, continue processing and proceed to Troponin Results Date.

7. Check Troponin Results Date.
   a. If Troponin Results Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Troponin Results Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Troponin Results Date equals a Non Unable To Determine Value, continue processing and proceed to Troponin Results Time.

8. Check Troponin Results Time.
   a. If Troponin Results Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Troponin Results Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Troponin Results Time equals a Non Unable To Determine Value, continue processing and proceed to Arrival Time.

9. Check Arrival Time.
   a. If the Arrival Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If Arrival Time equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value Calculation.

10. Calculate Measurement Value. Measurement Value, in minutes, is equal to the Troponin Results Date and Troponin Results Time minus the Arrival Time and Outpatient Encounter Date.

11. Check Measurement Value.
   a. If the Measurement Value is greater than sixty minutes, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the Measurement Value is less than or equal to sixty minutes, the case will proceed to a Measurement Category Assignment of E and will be in the Measure Population. Stop processing.
**HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES**

**ED-Throughput**

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP-18</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients</td>
</tr>
<tr>
<td>OP-19</td>
<td>Transition Record with Specified Elements Received by Discharged Patients</td>
</tr>
<tr>
<td>OP-20</td>
<td>Door to Diagnostic Evaluation by a Qualified Medical Personnel</td>
</tr>
<tr>
<td>OP-22</td>
<td>Left Without Being Seen*</td>
</tr>
</tbody>
</table>

**OP ED-Throughput GENERAL DATA ELEMENT LIST**

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td><strong>CMS Certification Number</strong>¹,²</td>
<td>All Records</td>
</tr>
<tr>
<td>First Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
</tr>
<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>National Provider Identifier¹,²</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td><strong>Outpatient Encounter Date</strong></td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a <em>Payment Source of Medicare who have a standard HIC number</em></td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
</tr>
<tr>
<td>Physician 1</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
<td>All Records</td>
</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

¹Transmission Data Element
²Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual

* Data entry for OP-22 will be achieved through the secure side of QualityNet.org via an online tool available to authorized users. Because the measure uses administrative data and not claims data to determine the measure’s denominator population, OP-22 is not included in the ED Throughput Population.

Hospital OQR Specifications Manual
Encounter dates **01-01-12 (1Q12) through 06-30-12 (2Q12) v.5.0**

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**OP ED-Throughput SPECIFIC DATA ELEMENT LIST**

<table>
<thead>
<tr>
<th>OP ED Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Time</td>
<td>OP-18, OP-20</td>
</tr>
<tr>
<td>Discharge Status</td>
<td>OP-18, OP-19, OP-20</td>
</tr>
<tr>
<td>E/M Code</td>
<td>OP-18, OP-19, OP-20</td>
</tr>
<tr>
<td>ED Departure Date</td>
<td>OP-18</td>
</tr>
<tr>
<td>ED Departure Time</td>
<td>OP-18</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>OP-18</td>
</tr>
<tr>
<td>Observation Services</td>
<td>OP-18</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>OP-18, OP-20</td>
</tr>
<tr>
<td>Provider Contact Date</td>
<td>OP-20</td>
</tr>
<tr>
<td>Provider Contact Time</td>
<td>OP-20</td>
</tr>
<tr>
<td>Transition Record Received</td>
<td>OP-19</td>
</tr>
</tbody>
</table>
OP-18, OP-19 and OP-20 Hospital Outpatient Emergency Department Throughput Population

ED Throughput
The population of the OP-18, OP-19 and OP-20 measures is identified using 1 data element:

- E/M Code

Patients seen in a Hospital Emergency Department (E/M Code on Appendix A OP Table 1.0) are included in the OP-18, OP-19 and OP-20 Hospital Outpatient Population and are eligible to be sampled if they have: An E/M Code on Appendix A, OP Table 1.0
ED Throughput Hospital Outpatient Population Algorithm

OP-18, OP-19 and OP-20

Start OP-18, OP-19 and OP-20 Population logic sub-routine

Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-18, OP-19 and OP-20 measures.

E/M Code

On OP Table 1.0 (Appendix A)

Patient is in the OP-18, OP-19 and OP-20 Outpatient Population

Patient is eligible to be sampled for the OP-18, OP-19 and OP-20 measures

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

End

Variable Key:
OP Population Reject Case Flag

Not on OP Table 1.0
(Appendix A)

Patient not in the ED Throughput Outpatient Population

Patient is not eligible to be sampled for OP-18, OP-19 and OP-20 measures

Set OP Population Reject Case Flag = “Yes”

Note: For information concerning sample size requirements for the OP-18, OP-19 and OP-20 measure, refer to the Population and Sampling Specifications section in this manual.

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Algorithm Narrative for ED-Throughput Hospital Outpatient Population (OP-18, OP-19 and OP-20)

Variable Key: OP Population Reject Case Flag

1. Start ED Throughput Initial Patient Population logic sub-routine. Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow.

2. Check E and M Code.
   a. If the E and M Code is not on OP Table 1.0 (Appendix A), the patient is not in the ED Initial Patient Population and is not eligible to be sampled for the ED Throughput measure set. Set the Initial Patient Population Reject Case Flag to equal Yes. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If the E and M Code is on OP Table 1.0 (Appendix A), the patient is in the ED Initial Patient Population and is eligible to be sampled for the ED Throughput measure set. Set Initial Patient Population Reject Case Flag to equal No. Return to Transmission Data Processing Flow in the Data Transmission section.
Measure Information Form

Measure Set: Hospital Outpatient ED-Throughput

Measure ID #: OP-18

Outpatient Setting: Emergency Department

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Performance Measure Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP-18a</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients – Overall Rate</td>
</tr>
<tr>
<td>OP-18b</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients – Reporting Measure</td>
</tr>
<tr>
<td>OP-18c</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients – Observation Patients</td>
</tr>
<tr>
<td>OP-18d</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients – Psychiatric/Mental Health Patients</td>
</tr>
<tr>
<td>OP-18e</td>
<td>Median Time from ED Arrival to ED Departure for Discharged ED Patients – Transfer Patients</td>
</tr>
</tbody>
</table>

Performance Measure Name: Median Time from ED Arrival to ED Departure for Discharged ED Patients

Description: Median time from emergency department arrival to time of departure from the emergency room for patients discharged from the emergency department.

Rationale: Reducing the time patients remain in the emergency department (ED) can improve access to treatment and increase quality of care. Reducing this time potentially improves access to care specific to the patient condition and increases the capability to provide additional treatment. In recent times, EDs have experienced significant overcrowding. Although once only a problem in large, urban, teaching hospitals, the phenomenon has spread to other suburban and rural healthcare organizations. According to a 2002 national U.S. survey, more than 90 percent of large hospitals report EDs operating "at" or "over" capacity. Overcrowding and heavy emergency resource demand have led to a number of problems, including ambulance refusals, prolonged patient waiting times, increased suffering for those who wait, rushed and unpleasant treatment environments, and potentially poor patient outcomes. Approximately one third of hospitals in the U.S. report increases in ambulance diversion in a given year, whereas up to half report crowded conditions in the ED. In a recent national survey, 40 percent of hospital leaders viewed ED crowding as a symptom of workforce shortages. ED crowding may result in delays in the administration of medication such as antibiotics for pneumonia and has been associated with perceptions of compromised emergency care. For patients with non-ST-segment-elevation myocardial infarction, long ED stays were associated with
decreased use of guideline-recommended therapies and a higher risk of recurrent myocardial infarction. When EDs are overwhelmed, their ability to respond to community emergencies and disasters may be compromised.

**Type of Measure:** Process

**Improvement Noted As:** A decrease in the median value

**Continuous Variable Statement:** Time (in minutes) from ED arrival to ED departure for patients discharged from the emergency department.

**Included Populations:**
- Any *ED Patient* from the facility’s emergency department

**Excluded Populations:**
- Patients who expired in the emergency department

**Data Elements:**
- *Arrival Time*
- *Discharge Status*
- *E/M Code*
- *ED Departure Date*
- *ED Departure Time*
- *ICD-9-CM Principal Diagnosis Code*
- *Observation Services*
- *Outpatient Encounter Date*

**Risk Adjustment:** No

**Data Collection Approach:** Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service.

**Data Accuracy:** None

**Measure Analysis Suggestions:** None

**Sampling:** Yes, for additional information see the Population and Sampling Specifications section.

**Data Reported As:** Aggregate measure of central tendency
Selected References:

OP-18: Median Time from ED Arrival to ED Departure for Discharged ED Patients

Continuous Variable Statement: Time (in minutes) from ED arrival to ED departure for patients discharged from the emergency department.

START

Observation Services

= Y or N

Discharge Status

Not = 20, 41

Arrival Time

== UTD

Non-UTD Value

ED Departure Date

= Non UTD

ED Departure Time

= Non UTD

Measurement Value = ED Departure Date and ED Departure Time minus Outpatient Encounter Date and Arrival Time (in minutes)

Case Will Be Rejected

< 0 minutes

Measurement Value

> or = 0

In Measure Population

OP-18 B

Not In Measure Population

OP-18 Z

OP-18 H
Note: Initialize the Measure Category Assignment for OP-18b, OP-18c, OP-18d, and OP-18e = 'B'.

Do not change the Measure Category Assignment that was already calculated for the overall rate (OP-18a).
Algorithm Narrative for
OP-18: Median Time from ED Arrival to ED Departure for Discharged ED Patients

Continuous Variable Statement: Time (in minutes) from ED arrival to ED departure for patients discharged from the emergency department.

1. Check Observation Services.
   a. If Observation Services is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Observation Services equals NO, the case will proceed to Discharge Status.
   c. If Observation Services equals YES, the case will proceed to Discharge Status.

2. Check Discharge Status.
   a. If Discharge Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Discharge Status equals 20, or 41 the case will proceed to a Measure Category Assignment of B. Stop processing.
   c. If Discharge Status does not equal 20 or 41, the case will proceed to Arrival Time.

3. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing case.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to ED Departure Date.

4. Check ED Departure Date.
   a. If ED Departure Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If ED Departure Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing.
   c. If ED Departure Date equals non-UTD, the case will proceed to ED Departure Time.

5. Check ED Departure Time.
   a. If ED Departure Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If ED Departure Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing.
   c. If ED Departure Time equals non-UTD, the case will proceed to Measurement Value Calculation.
6. Calculate the Measurement Value. Time in minutes is equal to the ED Departure Date and ED Departure Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

7. Check Measurement Value.
   a. If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D1.

8. Initialize the Measure Category Assignment for all cases in D1 to B bucket.


10. Check Observation Services.
    a. If Observation Services equals YES, the case will proceed to a Measure Category Assignment of D2. Proceed to ICD-9-CM Principal Diagnosis Code.
    b. If Observation Services equals NO, the case will proceed to ICD-9-CM Principal Diagnosis Code.

    a. If ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 7.01, the case will proceed to a Measure Category Assignment of D3. Proceed to Discharge Status.
    b. If ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 7.01, the case will proceed to Discharge Status.

12. Check Discharge Status.
    a. If Discharge Status equals 02, 43, or 66, the case will proceed to a Measure Category Assignment of D4. Proceed to Observation Services.
    b. If Discharge Status equals 01, 03, 04, 05, 06, 07, 09, 21, 50, 51, 61, 62, 63, 64, 65, or 70, the case will proceed to Observation Services.

13. Check Observation Services.
    a. If Observation Services equals YES, the case will proceed to a Measure Category Assignment of B. Stop processing.
    b. If Observation Services equals NO, the case will proceed to ICD-9-CM Principal Diagnosis Code.

    a. If ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 7.01, the case will proceed to a Measure Category Assignment of B. Stop processing.
    b. If ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 7.01, the case will proceed to Discharge Status.
15. Check Discharge Status.
   a. If Discharge Status equals 02, 43, or 66 the case will proceed to a Measure Category Assignment of B. Stop processing.
   b. If Discharge Status equals 01, 03, 04, 05, 06, 07, 21, 09, 50, 51, 61, 62, 63, 64, 65, or 70, the case will proceed to a Measure Category Assignment of D. Stop processing.
Measure Information Form

Measure Set: Hospital Outpatient ED-Throughput

Measure ID #: OP-19

Outpatient Setting: Emergency Department

Performance Measure Name: Transition Record with Specified Elements Received by Discharged Patients

Description: This measure is used to assess the percentage of patients, regardless of age, discharged from an emergency department (ED), or their caregiver(s), who received a transition record at the time of ED discharge including, at a minimum, all of the specified elements. A transition record is a core, standardized set of data elements related to patient’s diagnosis, treatment, and care plan that is discussed with and provided to patient or caregiver(s) in printed or electronic format at the time of emergency department (ED) discharge.

Rationale: Providing a detailed transition record at the time of ED discharge enhances the patient's preparation to self-manage post-discharge care and comply with the post-discharge treatment plan. Transitional care ensures coordination and continuity of health care as patients transfer between locations or levels of care in the same location. Multiple studies have linked uncoordinated transitions between sites of care and caregivers, even within the same institution, to higher hospital readmission rates, medical errors, duplication of services, and wasted resources.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Patients or their caregiver(s) who received a transition record at the time of emergency department (ED) discharge including, at a minimum, all of the following elements:

- Major procedures and tests performed during ED visit, AND
- Principal diagnosis at discharge OR chief complaint, AND
- Patient instructions, AND
- Plan for follow-up care (OR statement that none required), including primary physician, other health care professional, or site designated for follow-up care, AND
- List of new medications and changes to continued medications that patient should take after ED discharge, with quantity prescribed and/or dispensed (OR intended duration) and instructions for each

Included Populations: Not Applicable

Excluded Populations: None
Data Elements:
- Transition Record Received

Denominator Statement: All patients, regardless of age, discharged from an emergency department (ED).

Included Populations:
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0

Excluded Populations:
- Patients who expired
- Patients who left against medical advice (AMA) or discontinued care
- Patients who were admitted to the same hospital as the ED location

Data Elements:
- Discharge Status
- E/M Code
- Outpatient Encounter Date

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service.

Data Accuracy: Variation may exist in the assignment of Discharge Status codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion

Suggested References:


• One Patient, Many Places: Managing Health Care Transitions. *HMO Care Management Work Group.* February 2004. Available at [http://www.ahip.org/content/default.aspx?bc=38%7C65%7C69](http://www.ahip.org/content/default.aspx?bc=38%7C65%7C69)


OP-19: Transition Record with Specified Elements Received by Discharged Patients

**Numerator:** Patients or their caregiver(s) who received a transition record at the time of emergency department (ED) discharge.

**Denominator:** All patients, regardless of age, discharged from an emergency department (ED).
Algorithm Narrative for
OP-19: Transition Record with Specified Elements Received by Discharged Patients

Numerator Statement: Patients or their caregiver(s) who received a transition record at the time of emergency department (ED) discharge including.

Denominator Statement: All patients, regardless of age, discharged from an emergency department (ED).

1. Start processing. Run cases that are included in the OP-19 Population and pass the edits defined in the Data Processing Flow through this measure.

2. Check Discharge Status.
   a. If Discharge Status equals 07, 09, 20 or 41, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   b. If Discharge Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   c. If Discharge Status equals 01, 02, 03, 04, 05, 06, 21, 43, 51, 61, 62, 63, 64, 65, 66 or 70, continue processing and proceed to Transition Record Received.

3. Check Transition Record Received.
   a. If Transition Record Received equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   b. If Transition Record Received equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.
   c. If Transition Record Received is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient ED-Throughput

Measure ID #: OP-20

Outpatient Setting: Emergency Department

Performance Measure Name: Door to Diagnostic Evaluation by a Qualified Medical Personnel

Description: Median Time from ED Arrival to Provider Contact for Emergency Department Patients

Rationale: Reducing the time patients remain in the emergency department (ED) can improve access to treatment and increase quality of care. Reducing this time potentially improves access to care specific to the patient condition and increases the capability to provide additional treatment. In recent times, EDs have experienced significant overcrowding. Although once only a problem in large, urban, teaching hospitals, the phenomenon has spread to other suburban and rural healthcare organizations. According to a 2002 national U.S. survey, more than 90 percent of large hospitals report EDs operating "at" or "over" capacity. Overcrowding and heavy emergency resource demand have led to a number of problems, including ambulance refusals, prolonged patient waiting times, increased suffering for those who wait, rushed and unpleasant treatment environments, and potentially poor patient outcomes. Approximately one third of hospitals in the U.S. report increases in ambulance diversion in a given year, whereas up to half report crowded conditions in the ED. In a recent national survey, 40 percent of hospital leaders viewed ED crowding as a symptom of workforce shortages. ED crowding may result in delays in the administration of medication such as antibiotics for pneumonia and has been associated with perceptions of compromised emergency care. For patients with non-ST-segment-elevation myocardial infarction, long ED stays were associated with decreased use of guideline-recommended therapies and a higher risk of recurrent myocardial infarction. When EDs are overwhelmed, their ability to respond to community emergencies and disasters may be compromised.

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from ED arrival to Provider Contact for patients discharged from the emergency department.

Included Populations:
- Any ED Patient from the facility’s emergency department

Excluded Populations:
- Patients who expired in the emergency department
Data Elements:
- Arrival Time
- Discharge Status
- E/M Code
- Outpatient Encounter Date
- Provider Contact Date
- Provider Contact Time

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service.

Data Accuracy: None

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate measure of central tendency

Selected References:

Hospital OQR Specifications Manual
TPT-OP-20-2
Encounter dates 01-01-12 (1Q12) through 06-30-12 (2Q12) v.5.0

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OP-20: Door to Diagnostic Evaluation by a Qualified Medical Personnel

Continuous Variable Statement: Time (in minutes) from ED arrival to Provider Contact for patients discharged from the emergency department.

Note: There will be no category assignment E for this measure because it is a continuous variable.
Algorithm Narrative for
OP-20: Door to Diagnostic Evaluation by a Qualified Medical Personnel

Continuous Variable Statement: Time (in minutes) from ED arrival to Provider Contact for patients discharged from the emergency department.

1. Check Discharge Status.
   a. If Discharge Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Discharge Status equals 20 or 41, the case will proceed to a Measure Category Assignment of B. Stop processing.
   c. If Discharge Status does not equal 20 or 41, the case will proceed to Provider Contact Date.

2. Check Provider Contact Date.
   a. If Provider Contact Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Provider Contact Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing.
   c. If Provider Contact Date equals non-UTD, the case will proceed to Provider Contact Time.

3. Check Provider Contact Time.
   a. If Provider Contact Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Provider Contact Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing.
   c. If Provider Contact Time equals non-UTD, the case will proceed to Arrival Time.

4. Check Arrival Time.
   a. If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Stop processing.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value calculation.

5. Calculate the Measurement Value. Time in minutes is equal to the Provider Contact Date and Provider Contact Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes).

6. Check Measurement Value.
   a. If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
Measure Information Form

Measure Set: Hospital Outpatient ED-Throughput

Set Measure ID #: OP-22

Outpatient Setting: Emergency Department

Performance Measure Name: Left Without Being Seen

Description: Percent of patients who leave the Emergency Department (ED) without being evaluated by a physician/advance practice nurse/physician’s assistant (physician/APN/PA).

Measure ascertains response to the following question(s):

- What was the total number of patients who left without being evaluated by a physician/APN/PA? ______ (numerator)
- What was the total number of patients who presented to the ED? ______ (denominator)

Annual data submission period: July 1 – August 15, 2012 covering the performance period January 1- December 31, 2011.

Data entry will be achieved through the secure side of QualityNet.org via an online tool available to authorized users.

Definition for patients who presented to the ED:

- Patients who presented to the ED are those that signed in to be evaluated for emergency services.

Definition for Physician/APN/PA:

- Patients who are seen by a resident or intern are to be considered as seen by a physician.

- Advanced Practice Nurse (APN, APRN) titles may vary between state and clinical specialities. Some common titles that represent the advanced practice nurse role are:
  - Nurse Practitioner (NP)
  - Certified Registered Nurse Anesthetist (CRNA)
  - Clinical Nurse Specialist (CNS)
  - Certified Nurse Midwife (CNM)
### HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES
#### Pain Management

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
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</thead>
<tbody>
<tr>
<td>OP-21</td>
<td>Median Time to Pain Management for Long Bone Fracture</td>
</tr>
</tbody>
</table>

### OP PAIN MANAGEMENT GENERAL DATA ELEMENT LIST

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<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
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<tbody>
<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>CMS Certification Number&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>All Records</td>
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<td>First Name</td>
<td>All Records</td>
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<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
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<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>National Provider Identifier&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a Payment Source of Medicare who have a standard HIC number</td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
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<td>Physician 1</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
<td>All Records</td>
</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

<sup>1</sup>Transmission Data Element

<sup>2</sup>Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual
## OP Pain Management Specific Data Element List

<table>
<thead>
<tr>
<th>OP Pain Management Data Element Name</th>
<th>Collected For:</th>
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<tbody>
<tr>
<td>Arrival Time</td>
<td>OP-21</td>
</tr>
<tr>
<td>Discharge Status</td>
<td>OP-21</td>
</tr>
<tr>
<td>E/M Code</td>
<td>OP-21</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>OP-21</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>OP-21</td>
</tr>
<tr>
<td>Pain Medication</td>
<td>OP-21</td>
</tr>
<tr>
<td>Pain Medication Date</td>
<td>OP-21</td>
</tr>
<tr>
<td>Pain Medication Time</td>
<td>OP-21</td>
</tr>
</tbody>
</table>
OP-21 Hospital Outpatient Pain Management Population

Pain Management
The population of the OP-21 Pain Management measure is identified using 4 data elements:

- E/M Code
- Outpatient Encounter Date
- Birthdate
- ICD-9-CM Principal Diagnosis Code

Patients seen in a Hospital Emergency Department (E/M Code on Appendix A OP Table 1.0) are included in the OP-21 Pain Management Hospital Outpatient Population and are eligible to be sampled if they have:

- A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 2 years, and
- An ICD-9-CM Principal Diagnosis Code for Long Bone Fracture as defined in Appendix A, OP Table 9.0.
Pain Management Hospital Outpatient Population Algorithm
OP-21

Start OP-21 Population logic sub-routine

Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-21 measure.

E/M Code

On OP Table 1.0 (Appendix A)

Note: To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

Patient Age on Outpatient Encounter Date (in years) = Outpatient Encounter Date minus Birthdate

Patient Age on Outpatient Encounter Date

< 2 years

ICD-9-CM Principal Diagnosis Code

On OP Table 9.0 (Appendix A)

Note: For information concerning sample size requirements for the OP-21 measure, refer to the Population and Sampling Specifications section in this manual.

Patient is in the OP-21 Outpatient Population

Patient is eligible to be sampled for the OP-21 measure

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

End

Patient not in the Pain Management Outpatient Population

Patient is not eligible to be sampled for OP-21 measure

Set OP Population Reject Case Flag = “Yes”

Variable Key:
Patient Age on Outpatient Encounter Date
OP Population Reject Flag

Not on OP Table 1.0 (Appendix A)

Not on OP Table 9.0 (Appendix A)
Algorithm Narrative for OP-21: Pain Management Hospital Outpatient Population

1. Start Pain Management Initial Patient Population logic sub-routine. Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow.

2. Check E and M Code.
   a. If E and M Code is not on Appendix A, OP Table 1.0, Patient is Not in the Outpatient Pain Management Population. Patient is not eligible to be sampled for OP-21 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If E and M Code is on Appendix A, OP Table 1.0, continue processing and proceed to Measurement Value Calculation.

3. Calculate Measurement Value. Measurement Value, in years, is equal to the Outpatient Encounter Date minus Birthdate.

   a. If the Measurement Value is less than two years, Patient is Not in the Outpatient Pain Management Population. Patient is not eligible to be sampled for OP-21 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If the Measurement Value is greater than or equal to two years, continue processing and the case will proceed to ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 9.0, Patient is in the Outpatient Pain Management Population. Patient is eligible to be sampled for OP-21 measure. Set the OP Population Reject Case Flag to NO. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 9.0, Patient is Not in the Outpatient Pain Management Population. Patient is not eligible to be sampled for OP-21 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
Measure Information Form

Measure Set: Hospital Outpatient Pain Management

Measure ID #: OP-21

Outpatient Setting: Emergency Department

Performance Measure Name: Median Time to Pain Management for Long Bone Fracture

Description: Median time from emergency department arrival to time of initial oral or parenteral pain medication administration for emergency department patients with a principal diagnosis of long bone fracture (LBF).

Rationale: Pain management in patients with long bone fractures is undertreated in emergency departments (Ritsema, Kelen, Pronovost, & Pham, 2007). Emergency department pain management has room for improvement (Ritsema, Kelen, Pronovost, & Pham, 2007). Patients with bone fractures continue to lack administration of pain medication as part of treatment regimens (Brown, 2003). When performance measures are implemented for pain management of these patients administration and treatment rates for pain improve (Titler, 2009). Disparities continue to exist in the administration of pain medication for minorities (Epps, 2008 and Todd, 1993) and children as well (Brown, 2003 and Friedland, 1994).

Type of Measure: Process

Improvement Noted As: A decrease in the median value

Continuous Variable Statement: Time (in minutes) from emergency department arrival to time of initial oral or parenteral pain medication administration for emergency department patients with a diagnosis of a (long bone) fracture.

Included Populations:
- Patients with a patient age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 2 years, and
- An ICD-9-CM Principal Diagnosis Code for a (long bone) fracture as defined in Appendix A, OP Table 9.0, and
- Patients with Pain Medication, and
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0

Excluded Populations:
- Patients less than 2 years of age
- Patients who expired
- Patients who left the emergency department against medical advice or discontinued care
Data Elements:
- Birthdate
- Discharge Status
- E/M Code
- Arrival Time
- ICD-9-CM Principal Diagnosis Code
- Outpatient Encounter Date
- Pain Medication
- Pain Medication Date
- Pain Medication Time

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service. However, complete documentation includes the ICD-9-CM diagnosis, which requires retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate measure of central tendency

Suggested References:
OP-21: Median Time to Pain Management for Long Bone Fracture

Continuous Variable Statement: Time (in minutes) from emergency department arrival to time of initial oral or parenteral pain medication administration for emergency department patients with a diagnosis of a (long bone) fracture.

START

Discharge Status

- Missing
- 01, 02, 03, 04, 05, 06, 09, 21, 43, 50, 51, 61, 62, 63, 64, 65, 66, or 70

Pain Medication

- Missing

Arrival Time

- Missing

Pain Medication Date

- Missing

Pain Medication Time

- Missing

Measurement Value = Pain Medication Date and Pain Medication Time minus Outpatient Encounter Date and Arrival Time (in minutes)

CASE WILL BE REJECTED

- Measurement Value < 0 minutes

Not in Measure Population

- Measurement Value >= 0 minutes

In Measure Population

STOP
Algorithm Narrative for OP-21:
Median Time to Pain Management for Long Bone Fracture

Continuous Variable Statement: Time (in minutes) from emergency department arrival to time of initial oral or parenteral pain medication administration for emergency department patients with a diagnosis of a (long bone) fracture.

1. Start processing. Run cases that are included in the OP-21 Population and pass the edits defined in the Transmission Data Processing Flow through this measure.

2. Check Discharge Status.
   a. If Discharge Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Discharge Status equals 07, 20 or 41, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Discharge Status equals 01, 02, 03, 04, 05, 06, 09, 21, 43, 50, 51, 61, 62, 63, 64, 65, 66, or 70, continue processing and proceed to Pain Medication.

3. Check Pain Medication.
   a. If Pain Medication is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Pain Medication equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Pain Medication equals Yes, continue processing and proceed to Arrival Time.

4. Check Arrival Time.
   a. If the Arrival Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of Y and will be in the Measure Population. Stop processing.
   b. If Arrival Time equals a Non-Unable To Determine Value, continue processing and proceed to Pain Medication Date.

5. Check Pain Medication Date.
   a. If Pain Medication Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Pain Medication Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of Y and will be in the Measure Population. Stop processing.
   c. If Pain Medication Date equals a Non Unable To Determine Value, continue processing and proceed to Pain Medication Time.

a. If Pain Medication Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Pain Medication Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of Y and will be in the Measure Population. Stop processing.

c. If Pain Medication Time equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value Calculation.

7. Calculate Measurement Value. Measurement Value, in minutes, is equal to the Pain Medication Date and Pain Medication Time minus Outpatient Encounter Date and Arrival Time.

8. Check Measurement Value.

a. If the Measurement Value is less than zero minutes, the case will proceed to a Measurement Category Assignment of X and will be rejected. Stop processing.

b. If the Measurement Value is greater than or equal to zero minutes, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Stop processing.
### HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES

#### Stroke

<table>
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<tr>
<th>Measure ID #</th>
<th>Measure Short Name</th>
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<tbody>
<tr>
<td>OP-23</td>
<td>Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation Within 45 minutes of ED Arrival</td>
</tr>
</tbody>
</table>

#### OP STROKE GENERAL DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
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<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>CMS Certification Number$^{1,2}$</td>
<td>All Records</td>
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<td>First Name</td>
<td>All Records</td>
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<td>Hispanic Ethnicity</td>
<td>All Records</td>
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<tr>
<td>Last Name</td>
<td>All Records</td>
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<tr>
<td>National Provider Identifier$^{1,2}$</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a Payment Source of Medicare who have a standard HIC number</td>
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<td>Patient Identifier</td>
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<td>Race</td>
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<td>Sex</td>
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$^1$Transmission Data Element  
$^2$Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual
## OP STROKE SPECIFIC DATA ELEMENT LIST

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<thead>
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<tr>
<td>Discharge Status</td>
<td>OP-23</td>
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<tr>
<td>E/M Code</td>
<td>OP-23</td>
</tr>
<tr>
<td>Date Last Known Well</td>
<td>OP-23</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>OP-23</td>
</tr>
<tr>
<td>Head CT Scan or MRI Order</td>
<td>OP-23</td>
</tr>
<tr>
<td>Head CT Scan or MRI Interpretation Date</td>
<td>OP-23</td>
</tr>
<tr>
<td>Head CT Scan or MRI Interpretation Time</td>
<td>OP-23</td>
</tr>
<tr>
<td>Last Known Well</td>
<td>OP-23</td>
</tr>
<tr>
<td>Time Last Known Well</td>
<td>OP-23</td>
</tr>
</tbody>
</table>
OP-23 Hospital Outpatient Emergency Department Stroke Population

Stroke

The population of the OP-23 ED Stroke measure is identified using 4 data elements:

- **E/M Code**
- **Outpatient Encounter Date**
- **Birthdate**
- **ICD-9-CM Principal Diagnosis Code**

Patients seen in a Hospital Emergency Department (E/M Code on Appendix A OP Table 1.0) are included in the OP-23 ED Stroke Hospital Outpatient Population and are eligible to be sampled if they have:

- A Patient Age on *Outpatient Encounter Date* (*Outpatient Encounter Date – Birthdate*) >= 18 years, and
- An *ICD-9-CM Principal Diagnosis Code* for Acute Ischemic or Hemorrhagic Stroke as defined in Appendix A, OP Table 8.0.
Stroke Hospital Outpatient Population Algorithm

OP-23

Start OP-23 Population logic sub-routine

Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-23 measure.

**Variable Key:**
- Patient Age on Outpatient Encounter Date
- OP Population Reject Flag

**E/M Code**

On OP Table 1.0 (Appendix A)

**Patient Age on Outpatient Encounter Date**

Patient Age on Outpatient Encounter Date (in years) = Outpatient Encounter Date minus Birthdate

- <18 years
- >= 18 years

**ICD-9-CM Principal Diagnosis Code**

On OP Table 8.0 (Appendix A)

**Note:** To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

**Note:** For information concerning sample size requirements for the OP-23 measure, refer to the Population and Sampling Specifications section in this manual.

**Patient is in the Stroke Outpatient Population**

Patient is eligible to be sampled for the OP-23 measure

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

**Patient not in the Stroke Outpatient Population**

Patient is not eligible to be sampled for the OP-23 measure

Set OP Population Reject Case Flag = “Yes”

End
Algorithm Narrative for OP-23: Stroke Hospital Outpatient Population

1. Start Stroke Initial Patient Population logic sub-routine. Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow.

2. Check E and M Code.
   a. If E and M Code is not on Appendix A, OP Table 1.0, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If E and M Code is on Appendix A, OP Table 1.0, continue processing and proceed to Measurement Value Calculation.

3. Calculate Measurement Value. Measurement Value, in years, is equal to the Outpatient Encounter Date minus Birthdate.

   a. If the Measurement Value is less than 18 years, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If the Measurement Value is greater than or equal to 18 years, continue processing and the case will proceed to ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code.
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 8.0, Patient is in the Outpatient Stroke Population. Patient is eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to NO. Return to Transmission Data Processing Flow in the Data Transmission section.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 8.0, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow in the Data Transmission section.
**Measure Information Form**

**Measure Set:** Hospital Outpatient Stroke

**Measure ID #:** OP-23

**Outpatient Setting:** Emergency Department

**Performance Measure Name:** Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation Within 45 Minutes of ED Arrival.

**Description:** Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients who arrive at the ED within 2 hours of the onset of symptoms who have a head CT or MRI scan performed during the stay and having a time from ED arrival to interpretation of the Head CT or MRI scan within 45 minutes of arrival.

**Rationale:** Improved access to diagnostic imaging assists clinicians in the decision making process and treatment plans. Over 143,579 people die each year from stroke (Stroke Center, 2009). Stroke is the third leading cause of death in the United States. Each year, about 795,000 people suffer a stroke. About 600,000 of these are first attacks, and 185,000 are recurrent attacks (AHA, 2009). Decreasing radiology turnaround times will enhance decision making capabilities for patients with TIA or Acute Ischemic Stroke. The Food and Drug Administration (FDA) approved the use of tissue plasminogen activator (t-PA) for treatment of acute ischemic stroke when given within three hours of stroke symptom onset (NSA, 2000). Of all strokes, 87 percent are ischemic, 10 percent are intracerebral hemorrhage, and 3 percent are subarachnoid hemorrhage (NINDS, 2004). Because of the therapeutic time window for treatment possibilities, timely completion and results of the CT or MRI scan are imperative and will directly impact the quality of care a patient receives.

 Improved access to diagnostics assists clinicians in decision making. Diagnostic imaging and laboratory reports are expected to increase length of stay in the emergency department. Radiology report turnaround time can impact patient throughput times in the emergency department (Delfino, 2008). Decreasing radiology report turnaround times can have impacts across the facility and assist in reducing the length of stay and enhancing decision making capabilities for patient treatment plans (Marquez, 2005). Efficiencies in throughput with tasks can lead to less diversion, less overcrowding, less elopements, and less financial loss (Falvo, 2007).

**Type of Measure:** Process

**Improvement Noted As:** An increase in the rate

**Numerator Statement:** Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well, with an order for a head CT or MRI scan whose time from ED arrival to interpretation of the Head CT scan is within 45 minutes of arrival.

Hospital OQR Specifications Manual

Encounter dates 01-01-12 (1Q12) through 06-30-12 (2Q12) v.5.0

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Included Populations: Not Applicable

Excluded Populations: None

Data Elements:
- Arrival Time
- Head CT or MRI Scan Interpretation Date
- Head CT or MRI Scan Interpretation Time
- Outpatient Encounter Date

Denominator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.

Included Populations:
- Patients with an ICD-9-CM Principal Diagnosis Code for acute ischemic stroke, or hemorrhagic stroke as defined in Appendix A, OP Table 8.0; and
- Patients who had a Head CT or MRI Scan Order; and
- An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.1

Excluded Populations:
- Patients less than 18 years of age
- Patients who expired
- Patients who left the emergency department against medical advice or discontinued care

Data Elements:
- Birthdate
- Date Last Known Well
- Discharge Status
- E/M Code
- Head CT or MRI Scan Order
- ICD-9-CM Principal Diagnosis Code
- Last Known Well
- Time Last Known Well

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records. Some facilities may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunity for improvement at the point of care/service.

Data Accuracy: N/A

Measure Analysis Suggestions: None
Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion.
Suggested References:
OP-23: Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke patients who Received Head CT or MRI Scan Interpretation Within 45 minutes of ED Arrival

**Numerator:** Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well, with an order for a head CT or MRI scan whose time from ED arrival to interpretation of the Head CT scan is within 45 minutes of arrival.

**Denominator:** Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.

---

**Variable Key:**

- Last Known Well Minutes
- Head CT or MRI Scan Minutes

---

**Start:** Run cases that are include in the OP-23 Population and pass the edits defined in the Data Processing Flow through this measure.

**Discharge Status**

- Missing = 01, 02, 03, 04, 05, 06, 09, 21, 43, 50, 51, 61, 62, 63, 84, 65, 66, or 70
- 07, 20, or 41

**Head CT or MRI Scan Order**

- Missing = N
- = Y

**Last Known Well**

- Missing = N
- = Y

**Date Last Known Well**

- Missing = UTD
- Non-UTD Value

**Time Last Known Well**

- Missing = UTD
- Non-UTD Value

**Arrival Time**

- Missing = UTD
- Non-UTD Value

**Last Known Well Minutes**

\[ \text{Last Known Well Minutes} = \text{Outpatient Encounter Date and Arrival Time minus Date Last Known Well and Time Last Known Well (in minutes)} \]
Hospital OQR Specifications Manual
Encounter dates 01-01-12 (1Q12) through 06-30-12 (2Q12) v.5.0
CPT® only copyright 2011 American Medical Association. All rights reserved
Algorithm Narrative for OP-23:
Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke patients who Received Head CT or MRI Scan Interpretation Within 45 minutes of ED Arrival.

Numerator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients who arrive at the ED within 2 hours of the onset of symptoms who have a head CT or MRI scan performed during the stay and having a time from ED arrival to interpretation of the Head CT or MRI scan within 45 minutes of arrival.

Denominator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.

1. Start processing. Run cases that are included in the OP-23 Population and pass the edits defined in the Transmission Data Processing Flow through this measure.

2. Check Discharge Status.
   a. If Discharge Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Discharge Status equals 07, 20, or 41, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Discharge Status equals 01, 02, 03, 04, 05, 06, 09, 21, 43, 50, 51, 61, 62, 63, 64, 65, 66, or 70, continue processing and proceed to Head CT or MRI Scan.

3. Check Head CT or MRI Scan.
   a. If Head CT or MRI Scan is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Head CT or MRI Scan equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Head CT or MRI Scan equals Yes, continue processing and proceed to Last Known Well.

4. Check Last Known Well.
   a. If Last Known Well is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Last Known Well equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Last Known Well equals Yes, continue processing and proceed to Date Last Known Well.

5. Check Date Last Known Well.
a. If Date Last Known Well is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Date Last Known Well equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

c. If Date Last Known Well equals a Non Unable To Determine Value, continue processing and proceed to Time Last Known Well.

6. Check Time Last Known Well.

a. If Time Last Known Well is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Time Last Known Well equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

c. If Time Last Known Well equals a Non Unable To Determine Value, continue processing and proceed to Arrival Time.

7. Check Arrival Time.

a. If the Arrival Time equals Unable To Determine, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Stop processing.

b. If Arrival Time equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value Calculation.

8. Calculate Measurement Value. Measurement Value, in minutes, is equal to the Outpatient Encounter Date and Arrival Time minus Date Last Known Well and Time Last Known Well.


a. If the Measurement Value is greater than one hundred and twenty minutes, the case will proceed to a Measurement Category Assignment of B and will not be in the Measure Population. Stop processing.

b. If the Measurement Value is less than or equal to one hundred and twenty minutes, continue processing and proceed to Head CT or MRI Scan Interpretation Date.

10. Check Head CT or MRI Scan Interpretation Date.

a. If Head CT or MRI Scan Interpretation Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Head CT or MRI Scan Interpretation Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

c. If Head CT or MRI Scan Interpretation Date equals a Non Unable To Determine Value, continue processing and proceed to Head CT or MRI Scan Interpretation Time.
11. Check Head CT or MRI Scan Interpretation Time.
   a. If Head CT or MRI Scan Interpretation Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Head CT Scan Interpretation Time equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Head CT Scan Interpretation Time equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value Calculation.

12. Calculate Measurement Value. Measurement Value, in minutes, is equal to the Head CT or MRI Scan Interpretation Date and Head CT or MRI Scan Interpretation Time minus Outpatient Encounter Date and Arrival Time.

13. Check Measurement Value.
   a. If the Measurement Value is greater than forty-five, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the Measurement Value is less than or equal to forty-five, the case will proceed to a Measurement Category Assignment of E and will be in the Measure Population. Stop processing.
### OP SURGICAL GENERAL DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Time</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>CMS Certification Number&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>All Records</td>
</tr>
<tr>
<td>First Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
</tr>
<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>National Provider Identifier&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Outpatient Encounter Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC#</td>
<td>Collected by CMS for patients with a Payment Source of Medicare who have a standard HIC number</td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
</tr>
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<td>Physician 1</td>
<td>Optional for All Records</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records</td>
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<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
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</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

### OP SURGICAL SPECIFIC DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>OP Surgical Data Element Name</th>
<th>Collected For:</th>
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<tbody>
<tr>
<td>Antibiotic</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Antibiotic Allergy</td>
<td>OP-7</td>
</tr>
<tr>
<td>Antibiotic Name</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Antibiotic Route</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Antibiotic Timing</td>
<td>OP-6</td>
</tr>
<tr>
<td>Case Canceled</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Clinical Trial</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>CPT&lt;sup&gt;®&lt;/sup&gt; Code</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>CPT&lt;sup&gt;®&lt;/sup&gt; Code Date</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Infection Prior to Anesthesia</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Replacement</td>
<td>OP-6, OP-7</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>OP-7</td>
</tr>
</tbody>
</table>

<sup>1</sup> Transmission Data Element

<sup>2</sup> Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual

Encounter dates **01-01-12 (1Q12)** through **06-30-12 (2Q12)** v.5.0

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**OP-6 and OP-7 Hospital Outpatient Population**

The population of the OP-6 and OP-7 Surgical measures is identified using four data elements in this order:

- *CPT® Code*
- *CPT® Code Date*
- *Outpatient Encounter Date*
- *Birthdate*

Patients seen in a hospital-based outpatient surgery center are included in the OP-6 and OP-7 Hospital Outpatient Population and are eligible to be sampled if they have:

- A Current Procedural Terminology (*CPT®*) Code for surgery as defined in Appendix A, OP Table 6.0, and
- A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) >= 18 years
Surgical Hospital Outpatient Population Algorithm

OP-6 and OP-7

Start OP-6 and OP-7 Population logic sub-routine

Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-6 and OP-7 measures.

Variable Key:
Patient Age on Outpatient Encounter Date
OP Population Reject Flag

Start

CPT® Code

Not on OP Table 6.0

On OP Table 6.0

CPT® Code Date

< Outpatient Encounter Date

>= Output Encounter Date or UTD

Note: To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

Note: For information concerning sample size requirements for the OP-6/OP-7 measure, refer to the Population and Sampling Specifications section in this manual.

Patient Age on Outpatient Encounter Date (in years) = Outpatient Encounter Date minus Birthdate

Patient Age on Outpatient Encounter Date

>= 18 years

Patient is in the OP-6 and OP-7 Surgical Outpatient Population

Patient is eligible to be sampled for the OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

End

< 18 years

Patient is not in the OP-6 and OP-7 Surgical Outpatient Population

Patient is not eligible to be sampled for OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “Yes”

CPT® Code Date

On OP Table 6.0

CPT® Code

Not on OP Table 6.0

On OP Table 6.0

CPT® Code Date

< Outpatient Encounter Date

>= Output Encounter Date or UTD

Note: To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

Note: For information concerning sample size requirements for the OP-6/OP-7 measure, refer to the Population and Sampling Specifications section in this manual.

Patient Age on Outpatient Encounter Date (in years) = Outpatient Encounter Date minus Birthdate

Patient Age on Outpatient Encounter Date

>= 18 years

Patient is in the OP-6 and OP-7 Surgical Outpatient Population

Patient is eligible to be sampled for the OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

End

< 18 years

Patient is not in the OP-6 and OP-7 Surgical Outpatient Population

Patient is not eligible to be sampled for OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “Yes”

CPT® Code Date

On OP Table 6.0

CPT® Code

Not on OP Table 6.0

On OP Table 6.0

CPT® Code Date

< Outpatient Encounter Date

>= Output Encounter Date or UTD

Note: To calculate age must use the month and day portion of the outpatient encounter date and birthdate to yield the most accurate age.

Note: For information concerning sample size requirements for the OP-6/OP-7 measure, refer to the Population and Sampling Specifications section in this manual.

Patient Age on Outpatient Encounter Date (in years) = Outpatient Encounter Date minus Birthdate

Patient Age on Outpatient Encounter Date

>= 18 years

Patient is in the OP-6 and OP-7 Surgical Outpatient Population

Patient is eligible to be sampled for the OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “No”

Return to Data Processing Flow (Data Transmission section)

End

< 18 years

Patient is not in the OP-6 and OP-7 Surgical Outpatient Population

Patient is not eligible to be sampled for OP-6 and OP-7 measures

Set OP Population Reject Case Flag = “Yes”
Algorithm Narrative for Surgical Hospital Outpatient Population
OP-6 and OP-7

Variable Key: Patient Age on Outpatient Encounter Date, OP Population Reject Flag

2. Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-6 and OP-7 measures. Continue processing and proceed to CPT\textsuperscript{®} Code.
3. Check CPT\textsuperscript{®} Code.
   a. If the CPT\textsuperscript{®} Code for a patient is not on OP Table 6.0, the patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
      i) This patient is not eligible to be sampled for OP-6 and OP-7 measures.
      ii) Set OP Population Reject Case Flag equals Yes. Stop processing case.
   b. If the CPT\textsuperscript{®} Code for a patient is on OP Table 6.0, continue processing the patient and proceed to CPT\textsuperscript{®} Code Date.
4. Check CPT\textsuperscript{®} Code Date.
   a. If the CPT\textsuperscript{®} Code Date for a patient is prior to Outpatient Encounter Date, patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
      i) This patient is not eligible to be sampled for OP-6 and OP-7 measures.
      ii) Set OP Population Reject Case Flag equals Yes. Stop processing case.
   b. If the CPT\textsuperscript{®} Code Date is greater than or equal to Outpatient Encounter Date or UTD, continue processing.
5. Calculate Patient Age on Outpatient Encounter Date. Patient Age, in years, is equal to the Outpatient Encounter Date minus the Birthdate. Use the month and day portion of the Outpatient Encounter Date and Birthdate to yield the most accurate age.
6. Check Patient Age on Outpatient Encounter Date.
   a. If Patient Age on Outpatient Encounter Date is less than 18 years, patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
      i) Patient is not eligible to be sampled for OP-6 and OP-7 measures.
      ii) Set OP Population Reject Case Flag equals Yes. Stop processing case.
   b. If Patient Age on Outpatient Encounter Date is greater than or equal to 18 years, patient is in the OP-6 and OP-7 Surgical Outpatient Population.
      Note: For information concerning sample size requirements for the OP-6/OP-7 measure, refer to the Population and Sampling Specifications section in this manual.
      i) Patient is eligible to be sampled for the OP-6 and OP-7 measures.
      ii) Set OP Population Reject Case Flag equals No.
7. Return to Data Processing Flow (Data Transmission section). Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Surgery

Measure ID#: OP-6

Outpatient Setting: Hospital Outpatient Department Surgery

Performance Measure Name: Timing of Antibiotic Prophylaxis

Description: Surgical patients with prophylactic antibiotics initiated within one hour* prior to surgical incision.

*Patients who received vancomycin or a fluoroquinolone for prophylaxis should have the antibiotic initiated within two hours prior to surgical incision. Due to the longer infusion time required for vancomycin or a fluoroquinolone, it is acceptable to start these antibiotics within two hours prior to incision time.

Rationale: Multiple studies have demonstrated that timing is critical to the effectiveness of surgical antimicrobial prophylaxis and current guidelines recommend dosing within 1 hour before incision. It has been demonstrated that antibiotics to prevent experimental infections were effective only if administered during the 3 to 4 hour period after inoculation of bacteria into the wound (Miles, 1957). Furthermore, it has been reported that a variety of antimicrobials could prevent the development of experimental infections, but only if given within about 3 hours following wound contamination (Burke, 1961). In randomized clinical trials reported in 1964 and 1969, antimicrobials given before, during, and shortly after abdominal surgery were effective in preventing surgical site infection (SSI). The lowest rates of SSI in abdominal operations were associated with prophylaxis started within one hour prior to the incision (Stone, 1976). Similar findings have also been reported for cardiac operations (Classen, 1992). In a recent review of data from a European total joint arthroplasty registry, antibiotic delivery just before surgical incision was the most important factor in reducing surgical site infection rates.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

- Antibiotic Timing
Denominator Statement: Surgical patients with no evidence of prior infection.

Included Populations:
- Patients with a CPT® Code of selected surgeries as defined in Appendix A, OP Table 6.0

Excluded Populations:
- Patients who are less than 18 years of age
- Patients whose procedure is canceled prior to incision as defined in the Data Dictionary
- Patients with a CPT® Code of gastrostomy placement that represents a Replacement only, as defined in the Data Dictionary
- Patients enrolled in a Clinical Trial as defined in the Data Dictionary
- Patients with an Infection Prior to Anesthesia as defined in the Data Dictionary
- Patients who receive oral or intramuscular antibiotics only

Data Elements:
- Antibiotic
- Antibiotic Name
- Antibiotic Route
- Birthdate
- Case Canceled
- Clinical Trial
- CPT® Code
- Infection Prior to Anesthesia
- Outpatient Encounter Date
- Replacement

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

Data Accuracy: Abstracted antibiotics are those administered from the time of arrival until patient leaves from the outpatient setting. Refer to Appendix C, OP Table 6.0 which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given to relating this measure to OP-7 in order to evaluate which aspects of antibiotic prophylaxis (i.e., timing, selection) would most benefit from an improvement effort. The process-owners for timing of administration of antibiotics, as assessed in this measure, may include clinicians and support staff on the nursing unit as well as in the presurgical holding area, as well as in the operating room itself. Opportunities may exist in any of these arenas which, when addressed jointly, can generate true process improvement.

Sampling: Yes, for additional information see the Population and Sampling Specifications Section.

Data Reported As: Aggregate rate generated from count data reported as a proportion
Selected References:

**OP-6: Timing of Antibiotic Prophylaxis**

**Numerator:** Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

**Denominator:** Surgical patients with no evidence of prior infection.

Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through this measure.

Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain a valid value.
Antibiotic Grid Not Populated

Antibiotic Name

On OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on Table 6.0.

Antibiotic Route

= 3 for all antibiotics

= 1 or 2 or 4 for any antibiotic dose
Proceed ONLY with antibiotic doses administered via route ‘1’ or ‘2’ or ‘4’.

Antibiotic Route

= 1 or 4 for all antibiotics

= 2 for any antibiotic dose
Proceed ONLY with antibiotic doses administered via route ‘2’.

Case Will Be Rejected

Antibiotic Timing

= N

= Y

In Numerator Population

Not In Measure Population

In Measure Population

STOP

OP-6

OP-6

OP-6

OP-6

OP-6
Algorithm Narrative for OP-6: Timing of Antibiotic Prophylaxis

Numerator: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

Denominator: Surgical patients with no evidence of prior infection.

1. Start processing. Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through this measure.

2. Check Case Canceled.
   a. If Case Canceled is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Case Canceled equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Case Canceled equals No, continue processing and proceed to CPT® Code.

3. Check CPT® Code.
   a. If the CPT® Code is on OP Table 6.4, continue processing and proceed to Replacement.
      i) Check Replacement
         (1) If Replacement is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
         (2) If Replacement equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
         (3) If Replacement equals No, continue processing and proceed to Clinical Trial.
   b. If the CPT® Code is not on OP Table 6.4, continue processing and proceed to Clinical Trial.

4. Check Clinical Trial.
   a. If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Clinical Trial equals No, continue processing and proceed to Infection Prior to Anesthesia.

5. Check Infection Prior to Anesthesia.
   a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.

c. If Infection Prior to Anesthesia equals No, continue processing and proceed to Antibiotic.

6. Check Antibiotic.

a. If Antibiotic is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

b. If Antibiotic equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

c. If Antibiotic equals Yes, continue processing and proceed to Antibiotic Name.

Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain a valid value.

7. Check Antibiotic Name.

a. If Antibiotic Grid not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

b. Antibiotic Name must be on OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on Table 6.0. Continue processing and proceed to Antibiotic Route.

8. Check Antibiotic Route.

a. If Antibiotic Route equals 3 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If Antibiotic Route equals 1 or 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via route 1 or 2 or 4. Continue processing for Antibiotic Route.

9. Check Antibiotic Route.

a. If Antibiotic Route equals 1 or 4 for all antibiotics, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.

b. If Antibiotic Route equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to Antibiotic Timing.


a. If Antibiotic Timing is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

b. If Antibiotic Timing equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

c. If Antibiotic Timing equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
Measure Information Form

Measure Set: Hospital Outpatient Surgery

Measure ID #: OP-7

Outpatient Setting: Hospital Outpatient Department Surgery

Performance Measure Name: Prophylactic Antibiotic Selection for Surgical Patients

Description: Surgical patients who received prophylactic antibiotics consistent with current guidelines (specific to each type of surgical procedure).

Rationale: A goal of prophylaxis with antibiotics is to use an agent that is safe, cost-effective, and has a spectrum of action that covers most of the probable intraoperative contaminants for the operation. First- or second-generation cephalosporin’s satisfy these criteria for most operations, although quinolones are recommended for some urologic operations. Vancomycin is not recommended for routine use because of the potential for development of antibiotic resistance, but is acceptable if a patient is allergic to beta-lactams, as are fluoroquinolones and clindamycin in selected situations.

Type of Measure: Process

Improvement Noted As: An increase in the rate.

Numerator Statement: Surgical patients who received prophylactic antibiotics recommended for their specific operation.

Included populations: Not Applicable

Excluded Populations: None

Data Elements:
- Antibiotic Allergy
- Antibiotic Name
- Vancomycin

Denominator Statement: Surgical patients with no evidence of prior infection.

Included Populations:
- Patients with a CPT® Code of selected surgeries as defined in Appendix A, OP Table 6.0.

Excluded Populations:
- Patients less than 18 years of age
- Patients whose procedure is canceled prior to incision as defined in the Data Dictionary
- Patients with a CPT® Code of gastrostomy placement that represents a Replacement only, as defined in the Data Dictionary
- Patients enrolled in a Clinical Trial as defined in the Data Dictionary
- Patients with an Infection Prior to Anesthesia as defined in the Data Dictionary
- Patients who do not receive any antibiotics during the encounter

Data Elements:
- Antibiotic
- Antibiotic Route
- Birthdate
- Case Canceled
- Clinical Trial
- CPT® Code
- Infection Prior to Anesthesia
- Outpatient Encounter Date
- Replacement

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

Data Accuracy: Abstracted antibiotics are those administered from the time of arrival until the patient leaves the outpatient setting. Refer to Appendix C, OP Table 6.0, which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given by relating this measure to OP-6 in order to evaluate which aspects of antibiotic prophylaxis would most benefit from an improvement effort. The process owners for selection of appropriate antibiotics could include physicians/APNs/PAs and committees (e.g., QA, Infection Control, Pharmacy and Therapeutics, Surgical Section Subcommittees, etc.), any of which may choose to address this physician/APN/PA practice issue as part of a larger surgical infection prevention initiative.

Sampling: Yes, for additional information see the Population and Sampling Specifications Section.

Data Reported As: Aggregate rate generated from count data reported as a proportion
Selected References:
<table>
<thead>
<tr>
<th>Surgical Procedure (Appendix A)</th>
<th>Approved Antibiotics (Appendix C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac (Pacemakers or AICDs) or Vascular</strong></td>
<td></td>
</tr>
</tbody>
</table>
| OP Table 6.1                     | Cefazolin or Cefuroxime, OP Table 6.6 or Vancomycin* OP Table 6.12  
If β-lactam allergy: Vancomycin OP Table 6.12 or Clindamycin OP Table 6.7 |
| **Orthopedic/Podiatry**          | |
| OP Table 6.2                     | Cefazolin or Cefuroxime OP Table 6.6  
or Vancomycin* OP Table 6.12  
If β-lactam allergy: Vancomycin OP Table 6.12 or Clindamycin OP Table 6.7 |
| **Genitourinary**                | |
| Prostate biopsy†† OP Table 6.3   | Quinolone† OP Table 6.11  
OR 1<sup>st</sup> Generation cephalosporin OP Table 6.6a  
OR 2<sup>nd</sup> Generation cephalosporin OP Table 6.6b  
OR 3<sup>rd</sup> Generation cephalosporin OP Table 6.6c  
OR Aminoglycoside OP Table 6.2 + Metronidazole OP Table 6.9  
OR Aminoglycoside OP Table 6.2 + Clindamycin OP Table 6.7  
OR Aztreonam OP Table 6.5 + Metronidazole OP Table 6.9  
OR Aztreonam OP Table 6.5 + Clindamycin OP Table 6.7 |
| Penile prosthesis insertion, removal, revision OP Table 6.3a | Ampicillin/Sulbactam or Ticarcillin/Clavulanate or Pipercillin/Tazobactam OP Table 6.3  
OR Aminoglycoside OP Table 6.2 + 1<sup>st</sup> Generation cephalosporin OP Table 6.6a  
OR Aminoglycoside OP Table 6.2 + 2<sup>nd</sup> Generation cephalosporin OP Table 6.6b  
OR Aminoglycoside OP Table 6.2 + Vancomycin OP Table 6.12  
OR Aminoglycoside OP Table 6.2 + Clindamycin OP Table 6.7  
OR Aztreonam OP Table 6.5 + 1<sup>st</sup> Generation cephalosporin OP Table 6.6a  
OR Aztreonam OP Table 6.5 + 2<sup>nd</sup> Generation cephalosporin OP Table 6.6b  
OR Aztreonam OP Table 6.5 + Vancomycin OP Table 6.12  
OR Aztreonam OP Table 6.5 + Clindamycin OP Table 6.7 |
| **Gastric/Biliary**               | |
| PEG placement OP Table 6.4       | Cefazolin OP Table 6.6  
OR Cefuroxime OP Table 6.6  
OR Cefoxitin OP Table 6.4  
OR Cefotetan OP Table 6.4  
OR Ampicillin/Sulbactam OP Table 6.3a  
OR Cefazolin OP Table 6.6 + Metronidazole OP Table 6.9  
OR Cefuroxime OP Table 6.6 + Metronidazole OP Table 6.9  
OR Vancomycin* OP Table 6.12  
If β-lactam allergy:  
Clindamycin OP Table 6.7 ± Aminoglycoside OP Table 6.2  
OR Clindamycin OP Table 6.7 ± Quinolone OP Table 6.11  
OR Vancomycin OP Table 6.12 ± Aminoglycoside OP Table 6.2  
OR Vancomycin OP Table 6.12 ± Quinolone OP Table 6.11 |

Prophylactic Antibiotic Regimen Selection for Surgery
<table>
<thead>
<tr>
<th>Surgical Procedure (Appendix A)</th>
<th>Approved Antibiotics (Appendix C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gynecological</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Laparoscopically-assisted hysterectomy, Vaginal hysterectomy | Cefazolin or Cefuroxime OP Table 6.6, Cefoxitin or Cefotetan OP Table 6.4 or Ampicillin/Sulbactam OP Table 6.3a  
If β-lactam allergy:  
Metronidazole OP Table 6.9 + Aminoglycoside OP Table 6.2  
OR Metronidazole OP Table 6.9 + Quinolone OP Table 6.11  
OR Clindamycin OP Table 6.7 + Aminoglycoside OP Table 6.2  
OR Clindamycin OP Table 6.7 + Aztreonam OP Table 6.5  
OR Clindamycin OP Table 6.7 + Quinolone OP Table 6.11 |
| Pubovaginal sling | 1st Generation cephalosporin OP Table 6.6a  
OR 2nd Generation cephalosporin OP Table 6.6b  
OR Ampicillin/Sulbactam OP Table 6.3a  
OR Quinolone† OP Table 6.11  
If β-lactam allergy:  
Aminoglycoside OP Table 6.2 + Clindamycin OP Table 6.7  
OR Aminoglycoside OP Table 6.2 + Metronidazole OP Table 6.9  
OR Aztreonam OP Table 6.5 + Clindamycin OP Table 6.7  
OR Aztreonam OP Table 6.5 + Metronidazole OP Table 6.9 |
| **Head and Neck**               |                                  |
| OP Table 6.6 | Cefazolin or Cefuroxime OP Table 6.6  
OR Ampicillin/Sulbactam OP Table 6.3a  
OR Clindamycin OP Table 6.7 ± Aminoglycoside OP Table 6.2  
OR Vancomycin* OP Table 6.12 |
| **Neurological**                |                                  |
| OP Table 6.7 | Nafcillin or Oxacillin OP Table 6.8, Cefazolin or Cefuroxime OP Table 6.6, or Vancomycin* OP Table 6.12 or Clindamycin OP Table 6.7 |
| **Special Considerations**      |                                  |
| *Vancomycin is acceptable with a physician/APN/PA/pharmacist documented justification for its use (see data element Vancomycin).  
†The only operations for which oral antibiotics alone are acceptable are the Prostate biopsy and Pubovaginal sling procedures.  
†† The only operations for which intramuscular antibiotics alone are acceptable are the Prostate biopsy procedures. |
OP-7: Prophylactic Antibiotic Selection for Surgical Patients

**Numerator:** Surgical patients who received prophylactic antibiotics recommended for their specific operation.

**Denominator:** Surgical patients with no evidence of prior infection.

---

**START**

Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through these measures.

- **Case Canceled**
  - $= Y$ → **OP-7 B**
  - $= N$

- **CPT® Code**
  - On OP Table 6.4
    - Not on OP Table 6.4 → $= N$

- **Clinical Trial**
  - $= Y$

- **Infection Prior to Anesthesia**
  - $= Y$
    - $= N$

- **Antibiotic**
  - $= Y$
    - Not Populated

On OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on OP Table 6.0.

- **Antibiotic Name**
  - $= Y$
    - $= N$

- **Antibiotic Route**
  - $= 3$ for **ALL** antibiotics
    - $= 1, 2$ or $4$ for any antibiotic dose
    - Proceed **ONLY** with antibiotic doses administered via routes 1, 2, and 4.

- **OP-7 H**

---

**Note:** For each case include only those antibiotics with routes PO, IV and IM for further processing.

---

**Not in Measure Population**

- **OP-7 Z**

---

**Case Canceled**

- **OP-7 X**
  - Missing → $= Y$ → **OP-7 B**

---

**CPT® Code Replacement**

- Not on OP Table 6.4
  - On OP Table 6.4

---

**Note:** The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain a valid value.
Algorithm Narrative for OP-7: Prophylactic Antibiotic Selection for Surgical Patients

Numerator: Surgical patients who received prophylactic antibiotics recommended for their specific operation.

Denominator: Surgical patients with no evidence of prior infection.

1. Start processing. Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through these measures.

2. Check Case Canceled.
   a. If Case Canceled is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Case Canceled equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Case Canceled equals No, continue processing and proceed to CPT® Code.

3. Check CPT® Code.
   a. If the CPT® Code is on OP Table 6.4, continue processing and proceed to Replacement.
      i) If Replacement is missing, the case will proceed to a Measure Category Assignment X and will be rejected. Stop processing case.
      ii) If Replacement equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
      iii) If Replacement equals No, continue processing and proceed to Clinical Trial.
   b. If the CPT® Code is not on OP Table 6.4, continue processing and proceed to Clinical Trial.

4. Check Clinical Trial.
   a. If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Clinical Trial equals No, continue processing and proceed to Infection Prior to Anesthesia.
5. Check Infection Prior to Anesthesia.
   a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Infection Prior to Anesthesia equals No, continue processing and proceed to Antibiotic.

6. Check Antibiotic.
   a. If Antibiotic is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Antibiotic equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing case.
   c. If Antibiotic equals Yes, continue processing and proceed to Antibiotic Name.

7. Check Antibiotic Name.
   a. If Antibiotic Grid not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   b. If Antibiotic Name on OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on Table 6.0. Continue processing and proceed to Antibiotic Route.

6. Check Antibiotic Route.
   a. If Antibiotic Route equals 3 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.
   b. If Antibiotic Route equals 1, 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via routes 1, 2 and 4. Continue processing and proceed to CPT® Code.

   Note: For each case, include only those antibiotics with routes PO, IV and IM for further processing.

8. Check Antibiotic Name.
   a. If the CPT® Code is on OP Table 6.3, continue processing and proceed to Antibiotic Name.
      i) If any Antibiotic Name is on OP Table 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
      ii) If all Antibiotic Name is not on OP Table 6.11, continue processing and proceed to Antibiotic Route.
iii) If Antibiotic Route equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

iv) If Antibiotic Route equals 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via routes 2 and 4. Continue processing and proceed to Antibiotic Name.

Note: For each case include only those antibiotics with routes IV and IM for further processing.

v) If any Antibiotic Name is on Table 6.6a, 6.6b or 6.6c, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

vi) If all Antibiotic Name is not on Tables 6.6a, 6.6b and 6.6c, continue processing for Antibiotic Name.

vii) If all Antibiotic Name is not on OP Tables 6.2 and 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

viii) If any Antibiotic Name is on Table 6.2 or 6.5, continue processing for Antibiotic Name.

ix) If any Antibiotic Name is on OP Table 6.7 or 6.9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

taxi) If all Antibiotic Name is not on OP Tables 6.7 and 6.9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Table 6.3, continue processing for Antibiotic Route.

10. Check Antibiotic Route.

a. If the Antibiotic Route is equal to 4 for ALL antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the Antibiotic Route is equal to 1 or 2 for any antibiotic dose, proceed only with antibiotic doses administered via routes 1 and 2. Continue processing and proceed to CPT® Code.

Note: For each case include only those antibiotics with routes IV and PO for further processing.


a. If the CPT® Code is on OP Table 6.5a, continue processing and proceed to Antibiotic Name.

i) If any Antibiotic Name is on OP Table 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
ii) If all Antibiotic Name is not on OP Table 6.11, continue processing and proceed to Antibiotic Route.

iii) If Antibiotic Route equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

iv) If Antibiotic Route equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to Antibiotic Name.
   
   Note: For each case include only those antibiotics with route IV for further processing.

v) If any Antibiotic Name is on OP Table 6.3a, 6.6a, or 6.6b, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

vi) If all Antibiotic Name is not on OP Tables 6.3a, 6.6a and 6.6b, continue processing and proceed to Antibiotic Allergy.

vii) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

viii) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

ix) If Antibiotic Allergy equals Yes, continue processing and proceed to Antibiotic Name.

x) If all Antibiotic Name is not on OP Table 6.2 or 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

xi) If any Antibiotic Name is on OP Table 6.2 or 6.5, continue processing for Antibiotic Name.

xii) If any Antibiotic Name is on OP Table 6.7 or 6.9, the case will proceed to Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

xiii) If all Antibiotic Name is not on OP Tables 6.7 and 6.9, the case will proceed to Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Table 6.5a, continue processing and proceed to Antibiotic Route.

12. Check Antibiotic Route.

   a. If Antibiotic Route equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

   b. If Antibiotic Route equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to CPT® Code.
Note: For each case include only those antibiotics with routes IV for further processing.


a. If the CPT® Code is on OP Table 6.1 or 6.2, continue processing and proceed to Antibiotic Name.
   i) If any Antibiotic Name is on OP Table 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   ii) If all Antibiotic Name is not on OP Table 6.6, continue processing for Antibiotic Name.
   iii) If any Antibiotic Name is on OP Table 6.12, continue processing and proceed to Vancomycin.
   iv) If Vancomycin is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   v) If Vancomycin is any equals 9 and none equals 1, 2, 3, 4, 5, 6, 8, continue processing and proceed to Antibiotic Allergy.
   vi) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   vii) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.
   viii) If Antibiotic Allergy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   ix) If Vancomycin any equals 1, 2, 3, 4, 5, 6, 8 and none equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   x) If all Antibiotic Name is not on OP Table 6.12, continue processing for Antibiotic Name.
   xi) If any Antibiotic Name is on OP Table 6.7, continue processing and proceed to Antibiotic Allergy.
   xii) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   xiii) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.
   xiv) If Antibiotic Allergy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
xv) If all Antibiotic Name is not on OP Table 6.7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Tables 6.1 and 6.2, continue processing for CPT® Code.


a. If the CPT® Code is on OP Table 6.3a, continue processing and proceed to Antibiotic Name.
   i) If any Antibiotic Name is on OP Table 6.3, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   ii) If all Antibiotic Name is not on OP Table 6.3, continue processing for Antibiotic Name.
   iii) If all Antibiotic Name is not on OP Tables 6.2 and 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.
   iv) If any Antibiotic Name is on OP Table 6.2 or 6.5, continue processing for Antibiotic Name.
   v) If any Antibiotic Name is on OP Table 6.6a, 6.6b, 6.7, or 6.12, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   vi) If all Antibiotic Name is not on OP Tables 6.6a, 6.6b, 6.7 and 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Table 6.3a, continue processing for CPT® Code.

15. Check CPT® Code.

a. If the CPT® Code is on OP Table 6.4, continue processing and proceed to Antibiotic Name.
   i) If any Antibiotic Name is on OP Table 6.3a or 6.4 or 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.
   ii) If all Antibiotic Name is not on OP Tables 6.3a, 6.4 and 6.6, continue processing and proceed to Antibiotic Name.
   iii) If any Antibiotic Name is on OP Table 6.12, continue processing and proceed to Vancomycin.
   iv) If Vancomycin is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
   v) If Vancomycin is any equals 9 and none equals 1, 2, 3, 4, 5, 6, 8, continue processing and proceed to Antibiotic Allergy.
   vi) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.
vii) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

viii) If Antibiotic Allergy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

ix) If Vancomycin any equals 1, 2, 3, 4, 5, 6, 8 and none equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

x) If all Antibiotic Name is not on OP Table 6.12, continue processing for Antibiotic Name.

xi) If any Antibiotic Name is on OP Table 6.7, continue processing and proceed to Antibiotic Allergy.

xii) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

xiii) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

xiv) If Antibiotic Allergy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

xv) If all Antibiotic Name is not on OP Table 6.7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Table 6.4, continue processing for CPT® Code.


a. If the CPT® Code is on OP Table 6.5, continue processing and proceed to Antibiotic Name.

i) If any Antibiotic Name is on OP Table 6.3a, 6.4, or 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

ii) If all Antibiotic Name is not on OP Tables 6.3a, 6.4, and 6.6, continue processing and proceed to Antibiotic Allergy.

iii) If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

iv) If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

v) If Antibiotic Allergy equals Yes, continue processing and proceed to Antibiotic Name.

vi) If any Antibiotic Name is on OP Table 6.7 continue processing for Antibiotic Name.
vii) If any Antibiotic Name is on OP Table 6.2, 6.5 or 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

viii) If all Antibiotic Name is not on OP Tables 6.2, 6.5 and 6.11, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

ix) If all Antibiotic Name is not on OP Table 6.7, continue processing for Antibiotic Name.

x) If all Antibiotic Name is not on OP Table 6.9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

xi) If any Antibiotic Name is on OP Table 6.9, continue processing for Antibiotic Name.

xii) If any Antibiotic Name is on OP Table 6.2 or 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

xiii) If all Antibiotic Name is not on OP Tables 6.2 and 6.11, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is not on OP Table 6.5, continue processing for CPT® Code.

17. Check CPT® code.

a. If the CPT® Code is on OP Table 6.6, continue processing and check for Antibiotic Name.

   i) If any Antibiotic Name is on OP Table 6.3a, 6.6 or 6.7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

   ii) If all Antibiotic Name is not on OP Tables 6.3a, 6.6 and 6.7, continue processing and proceed to Antibiotic Name.

   iii) If any Antibiotic Name is on OP Table 6.12, continue processing and proceed to Vancomycin.

   iv) If Vancomycin is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

   v) If Vancomycin Any equals 9 and None equals 1, 2, 3, 4, 5, 6, 8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

   vi) If Vancomycin Any equals 1, 2, 3, 4, 5, 6, 8 and None equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

   vii) If all Antibiotic Name is not on OP Table 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

b. If the CPT® Code is on OP Table 6.7, continue processing and proceed to Antibiotic Name.
i) If any Antibiotic Name is on OP Table 6.6, 6.7 or 6.8, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

ii) If all Antibiotic Name is not on OP Tables 6.6, 6.7 and 6.8, continue processing for Antibiotic Name.

iii) If any Antibiotic Name is on OP Table 6.12, continue processing and proceed to Vancomycin.

iv) If Vancomycin is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing case.

v) If Vancomycin Any equals 9 and None equals 1,2,3,4,5,6,8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.

vi) If Vancomycin Any equals 1,2,3,4,5,6,8 and None equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing case.

vii) If all Antibiotic Name is not on OP Table 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing case.