## Hospital Outpatient Quality Measures
### Chest Pain (CP)

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP-4*</td>
<td>Aspirin at Arrival</td>
</tr>
<tr>
<td>OP-5*</td>
<td>Median Time to ECG</td>
</tr>
</tbody>
</table>

*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 †, ‡</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 †, ‡</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>

† Transmission Data Element
‡ 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 Code</td>
<td>OP-4, OP-5</td>
</tr>
<tr>
<td>E/M Code</td>
<td>OP-4, OP-5</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-10-CM Other Diagnosis Codes</td>
<td>OP-4, OP-5</td>
</tr>
<tr>
<td>ICD-10-CM Principal Diagnosis Code</td>
<td>OP-4, OP-5</td>
</tr>
<tr>
<td>Probable Cardiac Chest Pain</td>
<td>OP-4, OP-5</td>
</tr>
<tr>
<td>Reason for No Aspirin on Arrival</td>
<td>OP-4</td>
</tr>
</tbody>
</table>
OP-4 and OP-5 Hospital Outpatient Chest Pain Population

Chest Pain
The population of the OP-4 and OP-5 Chest Pain measures is identified using 6 data elements:
• E/M Code
• Discharge Code
• Outpatient Encounter Date
• Birthdate
• ICD-10-CM Principal Diagnosis Code
• ICD-10-CM Other Diagnosis Codes

Patients seen in a Hospital Emergency Department (E/M Code in Appendix A, OP Table 1.0) are included in the OP-4 and OP-5 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 Code), and
• A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) ≥ 18 years, and
• An ICD-10-CM Principal or Other Diagnosis Codes for Chest Pain as defined in Appendix A, OP Table 1.1a.

Patients with an ICD-10-CM Principal Diagnosis Code for AMI are not eligible for the Chest Pain Hospital Outpatient Population.
Algorithm Narrative for OP-4 and OP-5:
Chest Pain Hospital Outpatient Population

1. Start Chest Pain Hospital Outpatient Measure Set Population Logic (cases eligible for OP-4 and OP-5).

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: Clinical in the Data Transmission Section.

3. Check E/M Code.
   a. If E/M Code is not in Appendix A, OP Table 1.0, patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If E/M Code is in Appendix A, OP Table 1.0, continue processing and proceed to Discharge Code.

   a. If Discharge Code equals 1, 2, 3, 4b, 4c, 5, 6, 7, or 8, (Discharge Status code values would = 01, 03, 04, 05, 06, 07, 09, 20, 21, 41, 50, 51, 61, 62, 63, 64, 65, 66, 70), patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If Discharge Code equals 4a or 4d (Discharge Status code values would = 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 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-10-CM Principal Diagnosis Code.

7. Check ICD-10-CM Principal Diagnosis Code.
   a. If the ICD-10-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 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If the ICD-10-CM Principal Diagnosis Code is valid and not missing, proceed to ICD-10-CM Principal Diagnosis Code.
8. Check ICD-10-CM Principal Diagnosis Code.
   a. If the ICD-10-CM Principal Diagnosis Code is not in Appendix A, OP Table 1.1a, proceed to ICD-10-CM Other Diagnosis Codes.
   b. If the ICD-10-CM Principal Diagnosis Code is in Appendix A, OP Table 1.1a, patient is in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to No. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

9. Check ICD-10-CM Other Diagnosis Codes.
   a. If the ICD-10-CM Other Diagnosis Codes is not in Appendix A, OP Table 1.1a, patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If the ICD-10-CM Other Diagnosis Codes is in Appendix A, OP Table 1.1a, proceed to ICD-10-CM Principal Diagnosis Code.

10. Check ICD-10-CM Principal Diagnosis Code.
    a. If the ICD-10-CM Principal Diagnosis Code is in Appendix A, Op Table 1.1, patient is not in the Outpatient Chest Pain Population. Patient is not in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is not eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
    b. If the ICD-10-CM Principal Diagnosis Code is not in Appendix A, OP Table 1.1, patient is in the Chest Pain Hospital Outpatient Measure Population for OP-4 and OP-5. Patient is eligible to be sampled for the Chest Pain Hospital Outpatient Measure Set. Set the OP Population Reject Case Flag to No. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
NQF-Endorsed Voluntary Consensus Standards for Hospital Care
Measure Information Form

Performance Measure Name: Aspirin at Arrival

Measure ID #: OP-4

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

Outpatient Setting: Emergency Department

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-10-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-10-CM 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 Code
- E/M Code
- ICD-10-CM Other Diagnosis Codes
- ICD-10-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 record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However, complete documentation includes the principal or other ICD-10-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-10-CM codes; therefore, coding practices may require evaluation to ensure consistency. There may be additional variation by provider, facility, and documentation protocol for chart-abstracted data elements.

Measure Analysis Suggestions: None

Sampling: Yes; for additional information see the Population and Sampling Specification 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*).
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-10-CM Principal Diagnosis Code*.

2. Check *ICD-10-CM Principal Diagnosis Code*.
   a. If the *ICD-10-CM Principal Diagnosis Code* is not in Appendix A, OP Table 1.1, the case will proceed to *Probable Cardiac Chest Pain*.
   b. If the *ICD-10-CM Principal Diagnosis Code* is in 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If *Probable Cardiac Chest Pain* equals No, the case will proceed to *Aspirin Received*.
   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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If *Reasons for No Aspirin on Arrival* equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   c. If *Reason for No Aspirin on Arrival* equals 4, the case will proceed to a Measure Category Assignment of D. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
NQF-Endorsed Voluntary Consensus Standards for Hospital Care
Measure Information Form

Performance Measure Name: Median Time to ECG

Measure ID #: OP-5

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

Outpatient Setting: Emergency Department

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, 2008). The diagnosis and management of STEMI patients are 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 Notes 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-10-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1, or an ICD-10-CM 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 Code
- E/M Code
- ECG
- ECG Date
- ECG Time
- ICD-10-CM Other Diagnosis Codes
- ICD-10-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 record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However, complete documentation includes the principal or other ICD-10-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-10-CM codes; therefore, coding practices may require evaluation to ensure consistency. There may be additional variation by provider, facility, and documentation protocol for chart-abstracted data elements.

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*).

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**Diagram Description:**

1. **START**
2. 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.
3. ICD-10-CM Principal Diagnosis Code
   - Not on OP Table 1.1 (Appendix A)
     - Probable Cardiac Chest Pain
       - OP-5 X
     - Missing
       - OP-5 X
   - On OP Table 1.1 (Appendix A)
     - ECG
       - Missing
         - ECG Date
           - UTD
             - Non-UTD Value
               - ECG Time
                 - UTD
                   - Non-UTD Value
                     - Arrive Time
                       - UTD
                         - Non-UTD Value
                           - Measurement Value = ECG Date and ECG Time minus Outpatient Encounter Date and Arrival Time (in minutes)
                           - ≤ 0 minutes
                             - Case Will Be Rejected
                           - > 0 minutes
                             - In Measure Population
                           - Not In Measure Population
4. **STOP**
Algorithm Narrative for OP-5:
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-10-CM Principal Diagnosis Code.

2. **Check ICD-10-CM Principal Diagnosis Code.**
   a. If the **ICD-10-CM Principal Diagnosis Code** is not in Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain.
   b. If the **ICD-10-CM Principal Diagnosis Code** is in 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If **Probable Cardiac Chest Pain** equals No, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If **ECG** equals No, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   c. If **ECG** equals Yes, the case will proceed to ECG Date.

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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If **ECG Date** equals UTD, the case will proceed to a Measure Category Assignment of Y. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   c. If **ECG Date** equals a 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If **ECG Time** equals UTD, the case will proceed to a Measure Category Assignment of Y. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value.

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

   a. If Measure Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If the Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.