

**PCI and Thrombolysis for AMI
A Change in the Measurements
Tools and Resources for Hospital Performance Measurement
Improvement Activities**

Thirteenth in a series of targeted quality improvement articles

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Illinois Hospital Association

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Activities

Achieving the Standard of Care

Evidence based medicine has shown the benefit of timely intervention to resort blood flow in patients experiencing an acute myocardial infarction (AMI). Percutaneous coronary intervention (PCI) within 120 of hospital arrival (AMI-8a) and Thrombolytic Therapy within 30 minutes of hospital arrival (AMI-7a) examine the timeliness of these reperfusion interventions for patients experiencing an AMI complicated by specific electrocardiogram (ECG) changes. This article addresses the addition of the AMI proportion measures and changes to the existing AMI timing measures.

Now Four AMI Timing Measures

Effective July 1, 2004 discharges, Center for Medicare and Medicaid Services (CMS) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) implemented Phase I Alignment with changes to the AMI measurement set that includes two new AMI proportion measures. These measures examine the proportion of eligible AMI patients who received PCI within 120 of hospital arrival (AMI-8a) or received thrombolytic therapy within 30 minutes of hospital arrival (AMI-7a).

AMI – A Life Threatening Condition

AMI, or more commonly called a “heart attack” by most consumers, is an acute life-threatening condition brought about by significant coronary obstruction and subsequent reduction in blood flow to the heart muscle. Reduced blood flow leads to impaired tissue oxygenation with potential damage or death to the heart muscle.

The electrocardiogram (ECG) is one of several tests used to detect and diagnosis an AMI. AMI characterized by a ST elevation or a left bundle branch block (LBBB) on ECG is associated with a relatively high risk of death. PCI and thrombolysis are two evidenced based medical interventions used to restore blood flow during AMI. When performed in a timely fashion in patients with these ECG changes, restoring blood flow markedly improves survival rate; delays in restoring blood flow are associated with decreased benefit.

Percutaneous Coronary Intervention - PCI

PCI is a specialized procedure carried out in a cardiac catheterization lab. A catheter with a small balloon tip is inserted into a distal artery, usually located in the groin, and guided up to the point of obstruction in the coronary artery. Once in place, the balloon is expanded compressing the obstruction and stretching the artery open to increase blood flow. The procedure is also called a percutaneous transluminal coronary angioplasty (PTCA). Time to PCI was previously titled Time to PTCA.

Thrombolysis

Thrombolytic therapy, commonly referred to as “clot-busting drug,” involves the intravenous (IV) administration a pharmacologic agent designed to dissolve clots in the coronary arteries that may be blocking blood flow. This intervention does not require the use of a cardiac catheterization lab and can be initiated in the emergency area.

Thrombolysis Measurement Description

Time to Thrombolysis (AMI-7): Calculating the Measure’s Performance. Time to thrombolysis is a continuous variable measure reported as a *mean time*, in minutes, from hospital arrival to administration of thrombolytic therapy in AMI patients with ST elevation or a LBBB on ECG performed closest to hospital arrival. The *mean time* reported in minutes is based on the sum of all the patient’s time to thrombolysis in the measure population divided by the number of patients in the measure population for the period of time examined. Included in the eligible population are patients with:

- Principal Diagnosis code for AMI (410.xx), with some exceptions; refer to technical specifications
- Received thrombolytic therapy within 6 hours after hospital arrival (defined as > or = 0 minutes and < or = 360 minutes).

Thrombolysis within 30 minutes of hospital arrival (AMI-7a): Calculating the Measure’s Performance. Thrombolysis within 30 minutes of hospital arrival is reported as an aggregate rate (proportion), based on:

- Numerator includes AMI patients whose time from hospital arrival to thrombolysis is 30 minutes or less
- Denominator includes AMI patients with ST elevation or LBBB on ECG who received thrombolytic therapy
- Included in the eligible population are patients with
 - Principal Diagnosis code for AMI (410.xx), with some exceptions; refer to technical specifications
 - Thrombolytic therapy received within 6 hours after hospital arrival (defined as > or = 0 minutes and < or = 360 minutes).

The reported rate reflects the proportion of patients in the measure population that were in compliance with the measure.

PCI Measurement Description

Time to PCI (AMI-8): Calculating the Measure’s Performance. Time to PCI is a continuous variable measure reported as a *mean time*, in minutes, from hospital arrival to PCI in AMI patients with ST elevation or a LBBB on ECG performed closest to hospital arrival. The *mean time* reported in minutes is based on the sum of all the patient’s time to PCI in the measure population divided by the number of patients in the measure population for the period of time examined. Included in the eligible population are patients with:

- Principal Diagnosis code for AMI (410.xx), with some exceptions; refer to technical specifications
- Principle or Other Procedure code for PCI; refer to technical specifications

- PCI performed within 24 hours after hospital arrival (defined as > or = 0 minutes and < or = 1440 minutes).

PCI within 120 minutes of hospital arrival (AMI-8a): Calculating the Measure's Performance. PCI within 120 minutes of hospital arrival is reported as an aggregate rate (proportion), based on:

- Numerator includes AMI patients whose time from hospital arrival to PCI is 120 minutes or less
- Denominator includes AMI patients with ST elevation or LBBB on ECG performed closest to hospital arrival who received PCI.
- Included in the eligible population are patients with:
 - Principal Diagnosis code for AMI (410.xx), with some exceptions; refer to technical specifications
 - Principle or Other Procedure code for PCI; refer to technical specifications
 - PCI performed within 24 hours after hospital arrival (defined as > or = 0 minutes and < or = 1440 minutes).

The reported rate reflects the proportion of patients in the measure population that were in compliance with the measure.

Interpreting Performance Data: Before and After July 1, 2004 Discharges

To enhance the value of the AMI timing measures, it is best to examine the measures based on average times in conjunction with the proportion measures. Time to PCI and Time to Thrombolysis are reported as *average* times. Average times by calculation; include cases with times below and above the reported average. Therefore, an average PCI time of 120 minutes would reflect patients cases with times greater than 120 minutes and less than 120 minutes. Likewise, a average thrombolysis time of 30 minutes would reflect patient cases with times greater than 30 minutes and less than 30 minutes.

As your improvement goal must be to decrease the time to PCI or time to thrombolysis to less than 120 minutes and 30 minutes respectively for each and every eligible patient, the proportion times should be considered along with the average times.

Measures Now Reflect Early Hospital Interventions Based on Mean Times

Effective July 1, 2004 discharges and forward, all four timing measures limit the eligible population to patients who received early hospital intervention. Prior to this change, the intervention times related to PCI or thrombolysis any time during their hospital stay was included in the measure's calculation. With the change, eligible population is now limited to receiving PCI within 24 hours after hospital arrival or thrombolysis within 6 hours after hospital arrival better reflecting patients with early intervention.

In addition, the median time reported in the past has been replaced with an average or mean time. When reviewing 2004 performance data, consider these changes in the calculation of the average times reported before and after July 2004.

Hospitals Reporting Performance Measures

Hospitals reporting to CMS will report these measures as part of the AMI measurement set. Beginning with 2nd quarter 2004 discharges, CMS included the two AMI proportion measures in the Hospital Quality Alliance (HQA). Hospitals are encouraged to voluntarily report these proportion measures as part of the HQA for public reporting. CMS is not reporting the mean times to PCI or thrombolysis as part of the HQA. The measures are not part of the annual payment update (APU). Beginning with 3rd quarter 2004 discharges, hospitals reporting the AMI measurement set to JCAHO will report all four timing measures.

The measure's *technical specifications* are part of the CART Users Guide version 2.1 with information on discharges before July 1, 2004 and discharges occurring on July 1, 2004 or after. The most current version of the CART User's Manual is 2.2; both are available on the QNetExchange website.

PCI and Thrombolysis for AMI Web Based Resources

See Appendix I. for additional web based resources for PCI and thrombolysis for AMI.

Frequently Asked Questions – FAQs often reflect the insights and concerns of hospital staff involved in clinical care and data collection. The FAQs are updated as new questions are submitted and answered. Use FAQs as your first source to answer clinical and data related questions. FAQs are also an important educational tool for novice and expert. Select AMI as topic and enter these or similar terms into the search criteria: PCI, PTCA, angioplasty, thrombolysis, and thrombolytic.

For additional information about PCI or Thrombolysis for AMI, the National Quality Alliance Hospital Quality Measures, or to comment on this series, please contact Tim Philipp, Director, Quality Improvement at tphilipp@ihastaff.org.

APPENDIX I. PCI and Thrombolysis for AMI Web Based Resources

A common set of web based resources identified for the AMI core measures can be reviewed in document “Acute Myocardial Infarction Web Based Resources” on the IHA web site. This document outlines web resources addressing clinical guidelines, educational materials, evidence-based materials, and intervention tools.

New or updated materials specific to PCI and thrombolysis are listed below. For a general description of the web sites used, see the document “Generic Sources of Information for All Measures” on the IHA web site. To access the materials below, click on the web address and follow the additional steps.

- To review the AMI and the AMI measures and the evidence base supporting those measures, go to: www.medqic.org

Select Acute Myocardial Infarction (top menu bar), locate menu bar down the left side, under Project Support select Supporting Materials, and scroll down to these titles of interest:

AMI Cardiology College 2: 7th SOW Measures and Their Evidence Base (dated March 2003) and

AMI Cardiology College 1: AMI for the Non-Clinician (dated February 2003).