

**\*\*NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE\*\***

## **Measure Information Form**

**Measure Set:** Acute Myocardial Infarction (AMI)

**Set Measure ID#:** AMI-3

**Performance Measure Name:** ACEI or ARB for LVSD

**Description:** Acute myocardial infarction (AMI) patients with left ventricular systolic dysfunction (LVSD) and without both angiotensin converting enzyme inhibitor (ACEI) and angiotensin receptor blocker (ARB) contraindications who are prescribed an ACEI or ARB at hospital discharge. For purposes of this measure, LVSD is defined as chart documentation of a left ventricular ejection fraction (LVEF) less than 40% or a narrative description of left ventricular systolic (LVS) function consistent with moderate or severe systolic dysfunction.

**Rationale:** ACEI therapy reduces mortality and morbidity in patients with left ventricular systolic dysfunction (LVSD) after AMI (Flather, 2000; Pfeffer, 1992; Torp-Peterson, 1999; and Yusuf, 2000). Recent clinical trials have also established ARB therapy as an acceptable alternative to ACEI, especially in patients with heart failure and/or LVSD who are ACEI intolerant (Granger, 2003 and Pfeffer, 2003). National guidelines strongly recommend ACEI for patients hospitalized with AMI who have either clinical heart failure or LVSD (Antman, 2004 and Braunwald, 2002). Guideline committees have also supported the inclusion of ARBs in performance measures for AMI (Antman, 2004). Despite these recommendations, ACEIs remain under-utilized in eligible older patients hospitalized with AMI (Jencks, 2000).

**Type of Measure:** Process

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

**Numerator Statement:** AMI patients who are prescribed an ACEI or ARB at hospital discharge

**Included Populations:** Not Applicable

**Excluded Populations:** None

**Data Elements:**

- *ACEI Prescribed at Discharge*
- *ARB Prescribed at Discharge*

**Denominator Statement:** AMI patients with LVSD and without both ACEI and ARB contraindications

**Included Populations:** Discharges with:

- An *ICD-9-CM Principal Diagnosis Code* for AMI as defined in Appendix A, Table 1.1 AND
- Chart documentation of a LVEF less than 40% or a narrative description of LVS function consistent with moderate or severe systolic dysfunction

**Excluded Populations:**

- Patients less than 18 years of age
- Patients transferred to another acute care hospital or federal hospital
- Patients who expired
- Patients who left against medical advice
- Patients discharged to hospice
- Patients with comfort measures only documented by a physician, nurse practitioner, or physician assistant
- Patients with BOTH a potential contraindication/reason for not prescribing an ACEI at discharge AND a potential contraindication/reason for not prescribing an ARB at discharge, as evidenced by one or more of the following:
  - ACEI allergy AND ARB allergy
  - Moderate or severe aortic stenosis
  - Physician, nurse practitioner, or physician assistant documentation of BOTH a reason for not prescribing an ACEI at discharge AND a reason for not prescribing an ARB at discharge
  - Reason documented by physician, nurse practitioner, or physician assistant for not prescribing an ARB at discharge AND an ACEI allergy
  - Reason documented by physician, nurse practitioner, or physician assistant for not prescribing an ACEI at discharge AND an ARB allergy

**Data Elements:**

- *Admission Date*
- *Birthdate*
- *Comfort Measures Only*
- *Contraindication to Both ACEI and ARB at Discharge*
- *Discharge Status*
- *ICD-9-CM Principal Diagnosis Code*
- *LVSD*

**Risk Adjustment:** No

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

**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 Sampling Section.

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

**Selected References:**

- Antman EM, Anbe DT, Armstrong PW, Bates ER, Green LA, Hand M, Hochman JS, Krumholz HM, Kushner FG, Lamas GA, Mullany CJ, Ornato JP, Pearle DL, Sloan MA, Smith SC Jr; American College of Cardiology; American Heart Association; Canadian Cardiovascular Society. ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction--executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to revise the 1999 guidelines for the management of patients with acute myocardial infarction). *J Am Coll Cardiol*. 2004 Aug 4;44(3):671-719. Available at [www.acc.org/clinical/guidelines/stemi/index.pdf](http://www.acc.org/clinical/guidelines/stemi/index.pdf)
- Braunwald E, Antman EM, Beasley JW, Califf RM, Cheitlin MD, Hochman JS, Jones RH, Kereiakes D, Kupersmith J, Levin TN, Pepline CJ, Schaeffer JW, Smith EE III, Steward DE, Theroux P. ACC/AHA 2002 guideline update for the management of patients with unstable angina and non-ST-segment elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients with Unstable Angina). 2002. Available at [www.acc.org/clinical/guidelines/unstable/unstable.pdf](http://www.acc.org/clinical/guidelines/unstable/unstable.pdf)
- Flather MD, Yusuf S, Kober L et al. Long-term ACE-inhibitor therapy in patients with heart failure or left-ventricular dysfunction: a systematic overview of data from individual patients. ACE-Inhibitor Myocardial Infarction Collaborative Group. *Lancet* 2000; 355(9215):1575-1581.
- Granger CB, McMurray JJ, Yusuf S et al. Effects of candesartan in patients with chronic heart failure and reduced left-ventricular systolic function intolerant to angiotensin-converting-enzyme inhibitors: the CHARM-Alternative trial. *Lancet*. 2003;362:772-776.
- Jencks SJ, Cuedon T, Burwen DR, Fleming B, Houck PM, Kussmaul AE, Nilasena DS, Ordin DL, Arday DR. Quality of medical care delivered to Medicare beneficiaries: a profile at state and national levels. *JAMA*. 2000;284:1670-1676.
- Krumholz HM, Anderson JL, Brooks NH, Fesmire FM, Lambrew CT, Landrum MB, Weaver WD, Whyte J. ACC/AHA Clinical Performance Measures for Adults With ST-Elevation and Non-ST-Elevation Myocardial Infarction: a report of the ACC/AHA Task Force on Performance Measures (ST-Elevation and Non-ST-Elevation Myocardial Infarction Performance Measures Writing Committee). *J Am Coll Cardiol* 2006;47:236-65. Available at <http://www.acc.org> and <http://www.americanheart.org>.
- Pfeffer MA, Braunwald E, Moye LA, Basta L, Brown EJ, Jr., Cuddy TE, Davis BR, Geltman EM, Goldman S, Flaker GC, for the SAVE Investigators. Effect of captopril on mortality and morbidity in patients with left ventricular dysfunction after myocardial infarction. Results of the Survival and Ventricular Enlargement Trial. *N Engl J Med*. 1992;327:669-77.

- Pfeffer MA, McMurray JJ, Velazquez EJ et al. Valsartan, captopril, or both in myocardial infarction complicated by heart failure, left ventricular dysfunction, or both. *N Engl J Med.* 2003;349:1893-1906.
- Torp-Pedersen C, Kober L. Effect of ACE inhibitor trandolapril on life expectancy of patients with reduced left-ventricular function after acute myocardial infarction. TRACE Study Group. Trandolapril Cardiac Evaluation. *Lancet* 1999; 354(9172):9-12.
- Yusuf S, Pepine CJ, Garces C et al. Effect of enalapril on myocardial infarction and unstable angina in patients with low ejection fractions. *Lancet* 1992; 340(8829):1173-1178.

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**Denominator:** AMI patients with LVSD and without both ACEI and ARB contraindications .



