



Complete Summary

TITLE

Acute myocardial infarction (AMI): percentage of AMI patients prescribed angiotensin-converting enzyme (ACE) inhibitor at hospital discharge.

SOURCE(S)

Canadian Cardiovascular Outcomes Research Team (CCORT). CCORT/CCS quality indicators: quality indicators for acute myocardial infarction (AMI) care. [internet]. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2003 [cited 2004 Mar 31]. [various]. [6 references]

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

Brief Abstract

DESCRIPTION

This measure assesses the percentage of acute myocardial infarction (AMI) patients prescribed angiotensin-converting enzyme (ACE) inhibitors at hospital discharge.

RATIONALE

Cardiovascular disease continues to claim the lives of many Canadians and creates enormous disability for those who survive. While considerable progress has been made in developing effective treatment and therapies, significant opportunities remain to improve the quality of cardiac care provided for the benefit of all Canadians.

The combined results of laboratory and clinical research have identified specific clinical strategies that are beneficial for both initial treatment and secondary prevention of acute myocardial infarction (AMI). These therapies include the use of acetylsalicylic acid (ASA), thrombolytics, beta-blockers, angiotensin-converting enzyme (ACE) inhibitors and statins for AMI. However, these proven therapies are often being underutilized in routine clinical practice in Ontario and Canada and there is wide inter-hospital variation in their use. Increasing use of these therapies could lead to significant reduction in the mortality rate associated with these conditions.

A set of Canadian quality indicators for the care of AMI patients has been established. It is anticipated that these indicators will be useful to clinicians and researchers who want to measure and improve the quality of AMI patient care in Canada.

PRIMARY CLINICAL COMPONENT

Acute myocardial infarction; angiotensin-converting enzyme inhibitors

DENOMINATOR DESCRIPTION

Patients with a confirmed acute myocardial infarction (AMI) discharged alive (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Patients from the denominator who were prescribed angiotensin-converting enzyme (ACE) inhibitor at hospital discharge

Evidence Supporting the Measure

PRIMARY MEASURE DOMAIN

Process

SECONDARY MEASURE DOMAIN

Not applicable

EVIDENCE SUPPORTING THE MEASURE

A formal consensus procedure involving experts in relevant clinical, methodological, and organizational sciences

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Use of this measure to improve performance
Wide variation in quality for the performance measured

EVIDENCE SUPPORTING NEED FOR THE MEASURE

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Internal quality improvement
Quality of care research

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Physicians

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age 20 to 105 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

At present, approximately 3% of all Canadians aged 35 to 64 years report having heart disease.

EVIDENCE FOR INCIDENCE/PREVALENCE

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment)

study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

- Cardiovascular disease (CVD) is the leading cause of death in Canada, claiming over 78,000 lives (roughly 36% of all deaths) in Canada each year.
- Approximately 38,000 Canadians were hospitalized with acute myocardial infarction (AMI/heart attack) in 1996 - of these about 15% died within 30 days of the event and 23% died within one year. Many AMI patients who survive their index hospitalization go on to develop congestive heart failure. Hospitalized heart failure patients have an even worse prognosis, with a one-year mortality rate of 33% - worse than that of most malignancies.
- CVD also represents enormous disability, with over 30% of those who report they have heart disease being unable to work due to their illness.

EVIDENCE FOR BURDEN OF ILLNESS

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

UTILIZATION

Cardiovascular disease (CVD) accounts for 18% of all hospitalizations among men and women - more than any other health problem.

EVIDENCE FOR UTILIZATION

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

COSTS

The economic burden of cardiovascular disease (CVD) on the health care system is considerable and growing. In 1998, the estimated costs were approximately \$19 billion, comprised of \$6.8 billion in direct costs, plus \$11.6 billion in indirect costs. This figure is expected to increase as the population continues to age.

EVIDENCE FOR COSTS

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment)

study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Inclusions

Patients with confirmed acute myocardial infarction (AMI):

- Most responsible diagnosis of AMI (International Classification of Diseases, Ninth Revision [ICD-9] code 410)
- European Society of Cardiology/American College of Cardiology (ESC/ACC) clinical criteria indicating myocardial infarction (MI) (electrocardiogram changes, symptoms, enzymes)
- Timing of the MI - must have occurred before the patient arrived at hospital

Exclusions

- Not admitted to an acute care hospital
- Age less than 20 or greater than 105 years
- Invalid health card number
- Admitted to non-cardiac surgical service
- Transferred from another acute care facility
- AMI coded as an in-hospital complication
- AMI admission within the past year

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR (INDEX) EVENT

Clinical Condition
Institutionalization

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions

- Patients with confirmed acute myocardial infarction (AMI) who met case definition criteria (see the "Description of Case Finding" field) and discharged alive
- Past or current clinical features of heart failure
- Anterior infarction
- Ejection fraction (EF) less than 40% or left ventricular grade greater than or equal to 3/4

Exclusions

- Moderate or severe aortic stenosis (AS) (3+ or 4+ AS, aortic valve area [AVA] less than 1.0 cm²)
- Allergy or intolerance to angiotensin-converting enzyme (ACE) inhibitors (e.g., angioedema, hives, severe rash)
- Severe renal dysfunction (peak or last pre-discharge serum creatinine level greater than 200 micromol/L)*
- Systolic blood pressure less than 100 mmHg at hospital discharge while not on ACE inhibitors
- Bilateral renal artery stenosis (physician documentation)
- Hyperkalemia (peak or last pre-discharge K⁺ greater than 5.5 mEq/L*)
- Physician documented reason at any time for not prescribing ACE inhibitor (e.g., syncope, dizziness, symptomatic hypotension, patient refusal)

Note: *Indicates peak or last pre-discharge value as dictated by regional or institutional access to laboratory data. Peak laboratory value is preferred and last pre-discharge value is acceptable.

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions

Patients from the denominator who were prescribed angiotensin-converting enzyme (ACE) inhibitor at hospital discharge

Exclusions

Unspecified

DENOMINATOR TIME WINDOW

Time window precedes index event

NUMERATOR TIME WINDOW

Encounter or point in time

DATA SOURCE

Administrative data
Medical record

LEVEL OF DETERMINATION OF QUALITY

Individual Case

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a higher score

ALLOWANCE FOR PATIENT FACTORS

Unspecified

STANDARD OF COMPARISON

External comparison at a point in time
Internal time comparison
Prescriptive standard

PRESCRIPTIVE STANDARD

The benchmark/target level for angiotensin-converting enzyme inhibitor prescribed at hospital discharge is greater than or equal to 85%.

EVIDENCE FOR PRESCRIPTIVE STANDARD

Canadian Cardiovascular Outcomes Research Team (CCORT). Quality of cardiac care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) study -- Phase I. Report 1. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2004 Jan. 66 p.

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

Unspecified

Identifying Information

ORIGINAL TITLE

ACE inhibitors prescribed at discharge.

MEASURE COLLECTION

[CCORT/CCS Quality Indicators](#)

MEASURE SET NAME

[CCORT/CCS Quality Indicators for Acute Myocardial Infarction \(AMI\)](#)

SUBMITTER

Canadian Cardiovascular Outcomes Research Team

DEVELOPER

Canadian Cardiovascular Outcomes Research Team
Canadian Cardiovascular Society

ADAPTATION

Measure was not adapted from another source.

RELEASE DATE

2003 Jan

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

Canadian Cardiovascular Outcomes Research Team (CCORT). CCORT/CCS quality indicators: quality indicators for acute myocardial infarction (AMI) care. [internet]. Toronto (ON): Canadian Cardiovascular Outcomes Research Team (CCORT); 2003 [cited 2004 Mar 31]. [various]. [6 references]

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MEASURE AVAILABILITY

The individual measure, "ACE Inhibitors Prescribed at Discharge," is published in "Quality of Cardiac Care in Ontario. EFFECT (Enhanced Feedback for Effective Cardiac Treatment) Study -- Phase I, Report 1." This document is available from the [Canadian Cardiovascular Outcomes Research Team \(CCORT\)](#).

For more information, contact CCORT at, G1 06 2075 Bayview Avenue, Toronto, Ontario M4N 3M5; Phone: (416) 480-4055 x3874; Fax: (416) 480-6048; Web site: www.ccort.ca.

COMPANION DOCUMENTS

The following is available:

- Tran CT, Lee DS, Flintoft VF, et al. CCORT/CCS quality indicators for acute myocardial infarction care. Can J Cardiol 2003 Jan;19(1): 38-45.

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NQMC STATUS

This NQMC summary was completed by ECRI on July 1, 2004. The information was verified by the measure developer on July 26, 2004.

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