ACC CLINICAL DATA STANDARDS

American College of Cardiology Key Data Elements and Definitions for Measuring the Clinical Management and Outcomes of Patients With Acute Coronary Syndromes

A Report of the American College of Cardiology Task Force on
Clinical Data Standards (Acute Coronary Syndromes Writing Committee)

Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American College of Emergency Physicians, American Heart Association, Cardiac Society of Australia & New Zealand, National Heart Foundation of Australia, Society for Cardiac Angiography and Interventions, and the Taiwan Society of Cardiology

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I. INTRODUCTION

In the field of cardiology, large-scale clinical trials and registries have provided a wealth of data on hundreds of thousands of patients. This is especially true in the field of acute coronary syndromes (ACS), which range from ST-segment elevation myocardial infarction (STEMI) to non–ST-segment elevation MI (NSTEMI) to unstable angina (UA). These data have been used to define new therapies and to guide clinical care through evaluation of both the process and the quality of care and outcomes for patients with ACS.

The American College of Cardiology (ACC) recognizes the importance of using clinical data and has established a data set and launched the National Cardiovascular Data Registry (NCDR^{TM}), a national, voluntary registry of cardiac catheterization and percutaneous coronary intervention (PCI) procedures. Several national and international registries have adopted many of the elements and definitions contained in the ACC-NCDR^{TM} Cath Lab Module version 2.0 (1), thus providing the potential for more reliable comparisons across registries. Given the ACC's recognition of the importance of standardizing a common lexicon for describing the clinical management and outcomes of patients with a variety of conditions, the ACC has expanded its role to include the development of clinical data standards.

A. Organization of Writing Committee and Methods for Developing the ACS Clinical Data Standards

The process undertaken in developing these clinical data standards began with the ACC Task Force on Clinical Data Standards, which identified ACS as an important area in which to standardize definitions. A writing committee was formed that included a select group of 10 physicians who have been involved in large-scale ACS clinical trials and other registries and who were recognized experts in the field. Additionally, the writing committee included members who had expertise in developing performance measures for patients with acute myocardial infarction. Finally, this group included several international members to ensure balance in the selection of data elements for the type of practice worldwide that would be reflected by the data elements and definitions recommended in these standards. Toward that end, an informal collaboration with the European Society of Cardiology (ESC) was established.

The subcommittee met several times over a period of 2 years to refine the data standards to their present form. The overriding goals were to focus on important variables needed to assess the characteristics of patients, their treatment with both medication and interventional therapies, and their outcomes. In developing the list, the writing committee balanced completeness with length and thus tried to be as concise as possible to facilitate use of these variables by others in an actual registry or trial setting. Standardized definitions for each variable are provided. For these, the writing committee again balanced greater specificity of definitions against what information can readily and reliably be obtained from medical records to make these definitions functional in the various real-world settings in which they may be used.

Writing committee members compiled and reviewed case report forms, data elements, and definitions from national or international ACS registries and previous or ongoing clinical trials to develop an initial set of data elements. Examples of these data sources include the ACC-NCDR^{TM} (2), the National Registry of Myocardial Infarction (NRMI) (3), the Global Registry of Acute Coronary Events (GRACE) (4), and the Monitoring Trends and Determinants of Cardiovascular Disease (MONICA) (5), as well as the Thrombolysis in Myocardial Infarction (TIMI) (6–8), and the Global Use of Streptokinase and Tissue Plasminogen Activator to Open Occluded Arteries (GUSTO) (9–11) trials.

The data elements reflected an ongoing review of the medical literature to focus on new developments. Current scientific evidence provided the basis for the selection and definition of appropriate data elements required to evaluate and manage patients with ACS. Therefore, data elements and definitions were linked whenever possible to evidence-based national guidelines. For the purposes of these clinical data standards, the writing committee chose to review and reference several ACC/American Heart Association (AHA) guidelines, including but not limited to the ACC/AHA Guidelines for the Management of Patients With Acute Myocardial Infarction (12) and the ACC/AHA Guidelines for the Management of Patients With Unstable Angina/Non–ST-Segment Elevation Myocardial Infarction (13). In addition, the writing committee reviewed the Management of Acute Coronary Syndromes: Acute Coronary Syndromes Without Persistent ST-segment Elevation: Recommendations of the Task Force of the European Society of Cardiology (14) and adopted the definition of myocardial infarction (MI) as recently published in an ESC/ACC consensus document on the redefinition of MI (15). On a few occasions, data elements and definitions were linked to other national guidelines, such as the National Cholesterol Education Program (NCEP III) guidelines (16).

Finally, the committee members reviewed the list of data elements bearing in mind the intent of their use. For example, some data elements can be used for risk adjustment, others can be used to construct performance measures, and several elements can be used for multiple purposes. Additional uses include patient demographics, health services research, follow-up, and outcomes analysis.

The ACC Key Elements and Data Definitions for Measuring the Clinical Management and Outcomes of Patients With Acute Coronary Syndromes was reviewed by 4 official reviewers nominated by the ACC, the ACC/AHA Task Force on Performance Measures, the NCDR Planning and Management Task Force, and 3 outside content reviewers. To increase its applicability further, the document was posted on the ACC World Wide Web site for a 30-day

Table 1. Goals of the American College of Cardiology Listing of Acute Coronary Syndrome Data Elements and Standardized Definitions

1. Facilitate data management in future trials and registries
2. Allow for more reliable comparisons of results between trials and registries
3. Facilitate clinical research
4. Allow for better quality-of-care assessment and improvement programs
5. Allow for development of performance measures
6. Facilitate possible transition to electronic medical records

public comment period, and the comments were used to develop the final version. This document was approved for publication by the ACC governing body and was formally endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American College of Emergency Physicians, American Heart Association, Cardiac Society of Australia & New Zealand, National Heart Foundation of Australia, Society for Cardiac Angiography and Interventions and the Taiwan Society of Cardiology. This document will be considered current until the Task Force on Clinical Data Standards revises or withdraws it from distribution.

The document is presently divided into 3 sections:

- Introduction: A description of the methodology of developing the ACS Clinical Data Standards and intended goals for their use.
- Data Elements and Definitions: A listing of key data elements and definitions.
- Reference Guide: A multipurpose resource that maps common data fields between ACS core data elements and other national/regional data registries, links ACS core data elements to relevant ACC/AHA guidelines, and identifies potential uses for each core element.

The Introduction and Data Elements and Definitions sections are published in the December issue of the Journal of the American College of Cardiology. The Reference Guide is available online at www.acc.org.

B. Purpose of the ACS Clinical Data Standards

There are many goals that this project hopes to fulfill by providing a list of key data elements and standardized definitions in ACS (Table 1). First, it is hoped that standardized definitions will allow better cross-comparison of results and clinical outcomes between different trials and registries. This would be particularly true for meta-analyses of trials, where differences in data collection methods and in definitions have hampered the validity of these analyses. Furthermore, the standardized definitions should also facilitate the research that comes from the trials and registries, because the key elements needed for assessment of efficacy and safety and for appropriate risk adjustment would be included in the clinical data standards.

Second, the provision of a list of the major variables, outcomes, and definitions in ACS should facilitate the development and conduct of future registries at both indi-vidual hospital and national levels. In fact, the ACS Clinical Data Standards could be used in their entirety to develop a registry. For example, GRACE includes nearly all (104 elements) of the data elements included in this document (17). Alternatively, subsets of the data could be used if a more focused registry were to be performed, for example, one that evaluated the use of only patients with MI (STEMI or NSTEMI) but did not include UA patients, such as the NRMI (3). To a greater degree, if a given hospital wanted to perform a quality-improvement effort to reduce door-to-drug time (18), the list might be restricted to only 10 to 20 variables.

Third, the use of standardized definitions and registry data should facilitate quality improvement. Information on these data elements that is collected as part of a quality-improvement program at a hospital, state, or national level should provide the means to assess quality of care (both the process of care and clinical outcomes) and thereby facilitate improvements.

Fourth, these data elements and definitions can be used to assess performance measures that could facilitate improvement in quality of care on a population-wide basis by identifying underuse, overuse, or misuse of therapies (19,20). For example, they could be used to compare subgroups of patients with regard to the various performance measures and to identify certain subgroups in whom medications are underused (e.g., women) (21).

Finally, the list of data elements could become the basis for a standardized charting process with the anticipation that medical charting will progressively move toward an electronic format.

C. General Considerations of the ACS Clinical Data Standards

1. Data Elements. The writing committee paid close attention to the level of detail of the information provided about certain variables, such as timing of prior cardiovascular events, timing of procedures, exact drug names vs. classes of drugs, and types of insurance. For these or any of the data elements listed, one can always decide to collect more or less information. For example, if a hospital association were compiling a registry on patient insurance status vs. cardiac procedures and outcomes, the group might use more sub-categorizations than listed here. On the other hand, if a pharmaceutical company were doing a study to evaluate a new drug in UA, the type of insurance might not matter and could be omitted. A third example is a community hospital that wishes to track its use of new therapies, such as the glycoprotein IIb/IIIa inhibitors, for which as few as 10 of the listed elements might be collected on patients.

These data elements could also be expanded to include additional information, such as individual listing of all the relative contraindications to aspirin or beta-blockers, for careful measurement of performance measures, as was done in the Cooperative Cardiovascular Project (19). Expansion of the variables collected would also be expected in the

setting of a randomized clinical trial of a new drug, for which additional information would be required regarding study procedures and drug therapies. Thus, depending on the intended use of the variables, one could restrict or expand the number of data elements used. In either case, the definitions provided in this document should assist in standardizing the process.

2. Medication Use. Because medical therapies have such an important effect on the outcomes of patients with ACS, the proposed data elements and definitions are relatively detailed in tracking medication use. Specifically, it is proposed that data on the types of medications be collected at a minimum of 3 time points: before the acute event, the first 24 hours after the event, and at hospital discharge. In addition, antithrombotic therapies for PCI are included in this list. Furthermore, in cases in which there may be differences between drugs within a class, it is proposed that information on the exact brand be collected. One potential means of doing this efficiently in a registry is to use a coding system in which the data element (for example, for glycoprotein IIb/IIIa blockers) is not a check box of yes/no but rather a field in which a number (e.g., 0, 1, 2, or 3) is entered that represents a specific drug. In this fashion, space can be conserved on a registry form, but detailed information becomes available about the exact type of drug used. In addition, when new drugs become approved for use, they can simply be added to the definition as an extra number on the list, but no change is necessary in the data field itself on the registry form. Finally, as new classes of drugs become available, these would need to be added to the proposed list of medications.

3. Risk Adjustment and Outcomes. The list of data elements includes factors included in some of the major risk models, notably those developed in the GUSTO-I trial (22) and those from TIMI (23,24) and others (25). Outcomes can be adjusted for differences in patient characteristics and to allow better comparisons across hospitals, treatment strategies, and subgroups of patients. However, although the important data elements needed for risk adjustment

have been included, not all of the more minor aspects needed for very detailed risk assessment or patient subset assessment have been included. Notably, relative contraindications to some medications (for example, a history of retinal bleeding for use of aspirin or a prior history of liver dysfunction for the use of statins) were not included in an effort to keep the list of elements as streamlined as possible.

Cost-effectiveness of new (and old) therapies and treatment strategies is of growing importance (26–30). This data set includes items to allow estimation of resource utilization, which will allow estimation of cardiovascular costs.

Finally, many outcomes are included in the list of data elements. These are important for the evaluation of the clinical benefits and risks of medical and interventional therapies. With regard to the definition of MI, the Committee adopted the ESC/ACC definition of MI (15) with expansion of the definition detail to match current clinical trials (6–11). The standard cutpoint of CK-MB greater than or equal to 3 times the upper limit of normal following PCI was adopted (10,29). New data on the definition of MI following CABG was used as well (31). However, the data set recommends that all serial cardiac markers (CK-MB, CK, troponin) during the hospitalization be collected so that other thresholds could be applied. However, the data set recommends that all serial cardiac markers (CK-MB, CK, troponin) during the hospitalization be collected so that the other thresholds could be applied.

Some of the data elements listed would potentially require review by a physician (for example, final diagnosis of the admission event—UA vs. MI vs. noncardiac chest pain—or the assessment of coronary flow at cardiac catheterization) (31). However, the vast majority of data elements have simple definitions that the writing committee believes can be extracted from a standard medical chart.

In conclusion, the writing committee hopes that the attached set of data elements and definitions for patients with ACS will help facilitate research and assessment of quality of care and thereby advance the practice of medicine.

II. DEFINITIONS

ELEMENT	DEFINITION
Baseline Characteristics	
Gender	Patient's gender: male or female
Date of birth	Day, month, and year of the patient's birth
Race	Patient's race: 1. White 2. Black 3. Hispanic 4. Asian 5. Native American 6. Other race not llisted (Note: These categories could be used in a "check all that apply" format to identify mixed races.)

ELEMENT	DEFINITION
Insurance	Four broad types of insurance are defined as follows: 1. Government insurance refers to patients who are covered by government-reimbursed care. In the United States, this includes Medicare, Medicaid (including all state or federal Medicaid-type programs), and Veteran's Administration health plans. (Consider split Medicare/Medicaid.) 2. Commercial refers to all indemnity (fee-for-service) carriers and preferred provider organizations (PPOs) (e.g., Blue Cross/Blue Shield) 3. HMO refers to a health maintenance organization characterized by coverage that provides healthcare services for members on a prepaid "capitated" basis. 4. None refers to individuals with no or limited health insurance; thus, the individual is the payer regardless of ability to pay. Only mark "None" when "self" or "none" is denoted as the first insurance in the medical record. (Note: More detailed subcategorization of these broad categories could be considered.)
Prior angina	History of angina before the current admission. "Angina" refers to evidence or knowledge of symptoms before this acute event described as chest pain or pressure, jaw pain, arm pain, or other equivalent discomfort suggestive of cardiac ischemia. Indicate if angina existed more than 2 weeks before admission and/or within 2 weeks before admission.
Previous myocardial infarction (MI)	The patient has had at least 1 documented previous MI before admission. (For a complete definition, please refer to "MI" in the "Outcomes" section.) Date should be noted.
Prior congestive heart failure (CHF)	History of CHF. "CHF" refers to evidence or knowledge of symptoms before this acute event described as dyspnea, fluid retention, or low cardiac output secondary to cardiac dysfunction, or the description of rales, jugular venous distension, or pulmonary edema before the current admission.
Previous percutaneous coronary intervention (PCI)	Previous PCI of any type (balloon angioplasty, atherectomy, stent, or other) done before the current admission. Date should be noted.
Previous coronary artery bypass graft (CABG)	Previous CABG done before the current admission. Date should be noted.
Prior catheterization with stenosis greater than or equal to 50%	Documented coronary artery disease (CAD) at coronary angiography at any time before the current admission, with at least a 50% stenosis in a major coronary artery. If the patient had a cardiac catheterization before the index event that demonstrated a stenosis of 90% and that was successfully stented to a 0% residual, this should be coded as "yes," because a stenosis of greater than or equal to 50% was documented.
History of stroke	Documented history of stroke or cerebrovascular accident (CVA). Typically, a patient has had a history of stroke if there was loss of neurological function caused by an ischemic event with residual symptoms at least 24 hours after onset. The year of the most recent stroke before the current admission should be noted.
Type of stroke	Type of stroke: 1. Hemorrhagic: A stroke with documentation on imaging (e.g., computed tomographic [CT] scan or magnetic resonance imaging [MRI] of hemorrhage in the cerebral parenchyma, or a subdural or subarachnoid hemorrhage) 2. Nonhemorrhagic stroke: A focal neurological deficit that results from a thrombus or embolus (and not due to hemorrhage) that appears and is still partially evident for more than 24 hours 3. Unknown type/no imaging performed: The type of stroke could not be determined by imaging or other means (lumbar puncture, neurosurgery)
History of transient ischemic attack (TIA)	A focal neurological deficit (usually corresponding to the territory of a single vessel) that resolves spontaneously without evidence of residual symptoms at 24 hours
Peripheral arterial disease	Peripheral arterial disease can include the following: 1. Claudication, either with exertion or at rest 2. Amputation for arterial vascular insufficiency 3. Vascular reconstruction, bypass surgery, or percutaneous intervention to the extremities 4. Documented aortic aneurysm 5. Positive noninvasive test (e.g., ankle brachial index less than 0.8)
Diabetes	History of diabetes, regardless of duration of disease, need for antidiabetic agents, or a fasting blood sugar greater than 7 mmol/l or 126 mg/dl. If yes, the type of diabetic control should be noted (check all that apply): 1. None 2. Diet: Diet treatment 3. Oral: Oral agent treatment 4. Insulin: Insulin treatment (includes any combination of insulin)

ELEMENT	DEFINITION
Hypertension	Hypertension as documented by: 1. History of hypertension diagnosed and treated with medication, diet, and/or exercise 2. Blood pressure greater than 140 mmHg systolic or 90 mmHG diastolic on at least 2 occasions 3. Current use of antihypertensive pharmacological therapy
Smoking	History confirming cigarette smoking in the past. Choose from the following categories: 1. Current: Smoking cigarettes within 1 month of this admission 2. Recent: Stopped smoking cigarettes between 1 month and 1 year before this admission 3. Former: Stopped smoking cigarettes greater than 1 year before this admission 4. Never: Never smoked cigarettes
Dyslipidemia	History of dyslipidemia diagnosed and/or treated by a physician. National Cholesterol Education Program criteria include documentation of the following: 1. Total cholesterol greater than 200 mg/dl (5.18 mmol/l); or 2. Low-density lipoprotein (LDL) greater than or equal to 130 mg/dl (3.37 mmol/l); or, 3. High-density lipoprotein (HDL) less than 40 mg/dl (1.04 mmol/l). Treatment is also initiated if LDL is greater than 100 mg/dl (2.59 mmol/l) in patients with known coronary artery disease, and this *would* qualify as hypercholesterolemia.
Family history of CAD	Any direct blood relatives (parents, siblings, children) who have had any of the following at age less than 55 years: 1. Angina 2. MI 3. Sudden cardiac death without obvious cause
Chronic lung disease	Documented history of chronic lung disease (i.e., chronic obstructive pulmonary disease) or currently being treated with pharmacological therapy (e.g., inhalers, theophylline, aminophylline, or steroids) and/or has a forced expiratory volume in 1 second (FEV1) less than 75%, room air pO2 less than 60%, or room air pCO2 greater than 50%

Clinical Presentation

ELEMENT	DEFINITION
Acute coronary syndrome (ACS) symptom onset: date and time	• Date and time of the onset of symptoms that prompted the patient to seek medical attention • Symptom onset refers to the onset of cardiac ischemic symptoms related to this acute event, commonly appearing as chest pain or pressure, arm or jaw pain, dyspnea, nausea/vomiting, or syncope • In the event of stuttering symptoms, ACS symptom onset is the time at which symptoms became constant in quality or intensity
Presentation (to healthcare facility): date and time	Date and time the patient first presented to the hospital.
Type of admission	The categories of type of admission are as follows: 1. Elective (i.e., scheduled more than 24 hours before hospital arrival) 2. Urgent (i.e., through the emergency department, or directly from a physician's office) 3. Transferred from another facility
Admission location	The categories of location of patient at the time of admission to the hospital or observation unit are as follows: 1. Coronary or intensive care unit (CCU/ICU) 2. Step-down unit/monitored bed/cardiac ward 3. Unmonitored hospital floor 4. Observation unit/emergency department chest pain unit
Means of transport	The categories of the means by which the patient was transported to the facility are as follows: 1. Self/family 2. Ambulance 3. Mobile ICU 4. Air (helicopter) transfer from another facility 5. Ambulance transfer from another acute care facility
Killip class	Killip class of the patient at the time of hospital admission: 1. Class 1: Absence of rales over the lung fields and absence of S3 2. Class 2: Rales over 50% or less of the lung fields or the presence of an S3 3. Class 3: Rales over more than 50% of the lung fields 4. Class 4: Shock (see also Outcomes section for full definition)
Heart rate	Heart rate (beats per minute) should be the recording that was done closest to the time of presentation to the healthcare facility
Systolic and diastolic blood pressure (at time of presentation and on discharge)	Supine systolic and diastolic blood pressure (mmHg) should be the recording that was done closest to the time of presentation to the healthcare facility and on discharge

ELEMENT	DEFINITION
Height	Patient's height in centimeters or inches
Weight	Patient's weight in kilograms or pounds

Angina type	Category of patient's angina type if present (choose one):
	 I. Atypical chest pain: Pain, pressure, or discomfort in the chest, neck, or arms not clearly exertional or not otherwise consistent with pain or discomfort of myocardial ischemic origin
	 II. Stable angina: Angina without a change in frequency or pattern for the 6 weeks before this procedure. Angina is controlled by rest and/or sublingual/oral/transcutaneous medications.
	 III. Unstable angina (one of the following criteria is necessary):
	     1. Angina that occurred at rest and was prolonged, usually lasting more than 20 minutes
	     2. New-onset angina of at least Canadian Cardiovascular Society (CCS) classification III severity
	     3. Recent acceleration of angina reflected by an increase in severity of at least 1 CCS class to at least CCS class III
	 IV. MI: For a complete definition, please refer to "MI" in the "Outcomes" section.

Number of episodes of angina in last 24 hours	Number of distinct episodes of anginal pain that occurred in the last 24 hours before hospital admission
Secondary cause of angina (yes/no)	Note whether the angina was precipitated by a secondary factor such as fever, anemia, hypoxemia, tachycardia, thyrotoxicosis, or severe valvular disease, as defined by Braunwald (33)

ECG Findings

First 12-lead ECG: date and time	Note date and time the first 12-lead ECG was performed for acute episode (whether in a prehospital setting, emergency department, or inpatient unit).
Location of ECG changes	The location of each type of ECG change listed below can be broken into 4 categories: 1. Inferior leads: II, III, aVF 2. Anterior leads: V1 to V4 3. Lateral leads: I, aVL, V5 to V6 4. True posterior: (relevant only for tall R waves) V1 V2 Consideration can be given to recording posterior ST-segment changes (if applicable), the maximal amount of ST-segment changes, and/or the number of leads with ST-segment changes.
Type of ECG changes	1. ST-segment elevation indicates greater than or equal to 1 mm (0.1 mV) elevation in 2 or more contiguous leads 2. ST-segment depression of at least 0.5 mm (0.05 mV) in 2 or more contiguous leads (includes reciprocal changes) 3. T-wave inversion of at least 1 mm (0.1 mV) including inverted T waves that are not indicative of acute MI 4. Q waves refer to the presence of Q waves that are greater than or equal to 0.03 seconds in width and greater than or equal to 1 mm (0.1 mV) in depth in at least 2 contiguous leads
Bundle-branch block (BBB) and type	The presence of left or right BBB should be noted, as well as whether it is new, old, or of uncertain timing
Rhythm	The categories of rhythm are as follows: 1. Sinus rhythm 2. Atrial fibrillation (or flutter) 3. Paced 4. Other rhythm (e.g., ventricular tachycardia, supraventricular tachycardia)
ST elevation in lead V4R	If right-sided precordial leads are performed, the presence or absence of ST-segment elevation greater than or equal to 1 mm (0.1 mV) in lead V4R should be noted
Follow-up ECG: new Q waves	If a follow-up ECG is performed (at least 6 hours after the initial ECG, the presence or absence of new Q waves that are greater than or equal to 0.03 seconds in width, in at least 2 contiguous leads, and greater than or equal to 1 mm (0.1 mV) in depth not seen on initial ECG should be noted.

Laboratory Tests

Creatine kinase (CK)

• Upper limit of normal	The upper limit of normal of total CK as defined by individual hospital laboratory standards. The units of the CK and type of units (e.g., IU, ng/dl, kCat/l) should be noted.
• All values	All CK values during the hospitalization should be noted; include the units, date, and time

ELEMENT	DEFINITION
CK-MB	
• Upper limit of normal	The upper limit of normal of CK-MB as defined by individual hospital laboratory standards. The units of the CK-MB and type of units (e.g., IU, %, index, ng/dl, kCat/l) should be noted.
• All values	All MB values during the hospitalization should be noted; include the units, date, and time
Troponin T or troponin I	
• Troponin type	Indicate which type: T or I
• Upper limit of normal	Indicate the upper limit of normal (usually the 99th percentile of a normal population) and the units (e.g., ng/dl)
• All values	All troponin T or I values during the hospitalization should be noted; include units, date, and time
Other labs	
• Total serum cholesterol level	The first total serum cholesterol level and type of units should be noted
• LDL	First serum low density lipoprotein (LDL) and units (either calculated or direct, if measured)
• HDL	First serum high density lipoprotein (HDL) level and units
• C-reactive protein	First serum C-reactive protein level and units
• Serum creatinine	First creatinine level and units
• Hemoglobin A1c	Documented laboratory value and units for patient's hemoglobin A1c
Cardiac Procedures	
Stress test	Indicate whether an exercise tolerance or pharmacological stress test was performed during the hospital stay. Date should be noted.
• ECG alone, or either radionuclide imaging or echocardiogram	Indicate if the test involved only ECG monitoring, or included either radionuclide (perfusion) imaging (e.g., thallium, Sestamibi), or echocardiography
• Maximal or submaximal	Maximal stress test (symptom limited) or submaximal test (e.g., modified Bruce protocol ending with stage 1 or stage 2)

• Ischemia result (positive, negative, equivocal)	1. Positive: On an exercise tolerance test, the patient developed either:
	   a. Both ischemic discomfort and ST shift greater than or equal to 1 mm (0.1 mV) (horizontal or downsloping) or
	   b. New ST shift greater than or equal to 2 mm (0.2 mV) (horizontal or downsloping) believed to represent ischemia even in the absence of ischemic discomfort
	 If the patient had an equivalent type of exercise test (e.g., exercise thallium or MIBI test, stress echocardiography, or dipyridamole, thallium, or adenosine radioisotope scan) that showed definite evidence of ischemia (e.g., an area of clear reversible ischemia), this should be considered a positive test.
	 2. Negative: No evidence of ischemia (i.e., no typical angina pain and no ST shifts).
	 3. Equivocal: Either:
	   a. Typical ischemic pain but no ST shift greater than or equal to 1 mm (0.1 mV) (horizontal or downsloping) or
	   b. ST shift of 1 mm (0.1 mV) (horizontal or downsloping) but no ischemic discomfort

• Imaging testing	Note presence or absence of a fixed defect indicating an old MI
Ejection fraction (EF)	The first EF obtained during the hospital stay. It is the percent of blood emptied from the ventricle at the end of contraction and can be obtained, in preferred order, from a left ventriculogram, radionuclide ventriculography, or echocardiogram. If only a range is estimated for EF, the midpoint of the range should be the value noted.
EF test	Note type of test used for EF: 1. Contrast ventriculography 2. Radionuclide ventriculography 3. Echocardiography Note also whether it was estimated or calculated.
Cardiac catheterization/angiography	Diagnostic cardiac catheterization/angiography performed during the hospital stay. Date should be noted.

ELEMENT	DEFINITION
Maximum stenosis by vessel (left anterior descending coronary artery [LAD], left circumflex [LCx], right coronary artery [RCA], left main [LM], graft)	Stenosis represents the percentage occlusion, from 0 to 100%, associated with the identified vessel systems. Percent stenosis at its maximal point is estimated to be the amount of reduction in the diameter of the "normal" vessel proximal to the lesion. For the denominator, take the maximum internal lumen diameter proximal and distal to the lesion. In instances where multiple lesions are present, enter the highest percentage stenosis noted. The systems of interest are as follows and should include major branch vessels of greater than 2 mm diameter: • Greatest stenosis assessed in the LAD or any major branch vessel • Greatest stenosis assessed in the LCx or any major branch vessel • Greatest stenosis assessed in the RCA or any major branch vessel • Greatest stenosis assessed in the LM • Greatest stenosis assessed in bypass graft
Culprit artery	Vessel considered to be responsible for the ACS. The investigator should use his/her judgment in choosing the primary vessel. In cases in which this is difficult to determine (despite correlation of ECG changes and angiographic data), the vessel supplying the largest territory of myocardium should be selected: • LAD • LCx • RCA • LM • Graft • Unknown Note: "None" should be considered if there is no apparent coronary vessel lesion that could be responsible for evidence of ischemia.
Culprit artery TIMI flow	TIMI grade flow in the culprit artery is defined as follows: 1. Grade 0 (no perfusion): There is no antegrade flow beyond the point of occlusion 2. Grade 1 (penetration without perfusion): The contrast material passes beyond the area of obstruction but "hangs up" and fails to opacify the entire coronary bed distal to the obstruction for the duration of the cineangiographic filming sequence 3. Grade 2 (partial perfusion): The contrast material passes across the obstruction and opacifies the coronary bed distal to the obstruction. However, the rate of entry of contrast material into the vessel distal to the obstruction or its rate of clearance from the distal bed (or both) is perceptibly slower than its entry into or clearance from comparable areas not perfused by the previously occluded vessel (e.g., the opposite coronary artery or the coronary bed proximal to the obstruction) 4. Grade 3 (complete perfusion): Antegrade flow into the bed distal to the obstruction occurs as promptly as antegrade flow into the bed from the involved bed and is as rapid as clearance from an uninvolved bed in the same vessel or the opposite artery
PCI	PCI performed. Date should be noted.
Time of first balloon inflation	Time of the first balloon inflation or stent placement. If the exact time of first balloon inflation or initial stent (if no balloon) placement is not known, the time of the start of the procedure should be indicated.

PCI status	Note the status of the PCI using the following categories:
	I. Elective: The procedure could be deferred without increased risk of compromised cardiac outcome
	II. Urgent: All of the following conditions are met:
	  A. Not elective
	  B. Not emergency
	  C. Procedure required during same hospitalization to minimize chance of further clinical deterioration
	III. Emergency: The patient's clinical status includes any of the following:
	  A. Ischemic dysfunction (any of the following)
	    1. Ongoing ischemia including rest angina despite maximal medical therapy (medical and/or intra-aortic balloon pump [IABP]
	    2. Acute evolving MI within 24 hours before intervention
	    3. Pulmonary edema requiring intubation
	  B. Mechanical dysfunction (either of the following):
	    1. Shock with circulatory support
	    2. Shock without circulatory support
	IV. Salvage: The patient is undergoing CPR en route to the catheterization laboratory

Number of lesions attempted	Number of lesions into which an attempt was made to pass a guidewire, whether successful or not
Number of stents placed	Number of stents placed

ELEMENT	DEFINITION
Number of lesions successfully dilated	Number of lesions in which residual postintervention stenosis is less than 50% of the arterial luminal diameter, TIMI flow is 3, and the minimum decrease in stenosis is 20%
Glycoprotein (GP) IIb/IIIa blockade	Whether GP IIb/IIIa was used, and if so, when initial dose was first administered: • Before cateterization laboratory visit • Immediately preceding PCI • During PCI, but after initial balloon inflation • After catheterization laboratory visit • Contraindicated Note the exact drug used. Available drugs are abciximab, eptifibatide, tirofiban, trial-based agent (not listed above or randomized blindly between 2 agents), other.
CABG	CABG procedure performed during this admission. Date should be noted.
IABP	IABP used during this admission
Pulmonary artery catheter	Pulmonary artery (Swan Ganz) catheter used during this admission
Temporary pacemaker	Temporary pacemaker placed during this admission
Permanent pacemaker	Permanent pacemaker placed during this admission
Ventilator	Intubation and need for respiratory support on a ventilator
Medications	*For all the medications listed below, their use at 3 time points should be noted:* *1. Before hospital admission (i.e., chronic therapy)* *2. During the first 24 hours after hospital admission (which does include medications given in the immediate prehospital [ambulance] setting)* *3. Hospital discharge* *For selected medications, contraindications should be noted.*
Fibrinolytic therapy	Fibrinolytic therapy administered. Note the exact drug used.
Date and time fibrinolytic therapy initiated	Date and time the intravenous (IV) fibrinolytic was initiated. If initiated by a bolus dose, note date and time the initial bolus was administered.
• Fibrinolytic therapy—contraindications	1. Previous hemorrhagic stroke at any time; other strokes or cerebrovascular events within 1 year 2. Known intracranial neoplasm 3. Active or recent (within 2 to 4 weeks) internal bleeding (does not include menses) 4. Suspected aortic dissection 5. Severe uncontrolled hypertension on presentation (blood pressure 180/110 mmHg). Note: This could be an absolute contraindication in low-risk patients with MI. 6. History of prior CVA or known intracerebral pathology not covered in contraindications 7. Current use of anticoagulants in therapeutic doses (INR greater than or equal to 2); known bleeding diathesis 8. Recent trauma (within 2 to 4 weeks), including head trauma, traumatic or prolonged (greater than 10 minutes) CPR, or major surgery (less than 3 weeks) 9. Pregnancy
IV nitrate	Nitroglycerin was administered intravenously
Nitrates (oral or topical)	Oral or topical nitroglycerin was administered. Commonly prescribed agents include isosorbide dinitrate, isosorbide mononitrate, Nitro-Dur transdermal infusion system, or nitroglycerin paste. Sublingual nitroglycerin or nitroglycerin spray *used on an as-needed basis only* should not be noted in this category.
IV beta-blockers	IV beta-blockers administered. Some forms of IV beta-blockers include atenolol, metoprolol, propranolol, timolol, esmolol, and labetalol.
Oral beta-blockers	Oral beta-blockers administered. Some generic forms of oral beta-blockers include atenolol, metoprolol, nadolol, pindolol, propranolol, timolol, acebutolol, bucindolol, bisoprolol, labetalol, and carvedilol.
• Beta-blockers—contraindications	1. Allergy or history of intolerance 2. Bradycardia (heart rate less than 60 beats per minute) 3. Symptomatic acute heart failure 4. Systolic blood pressure of less than 100 mmHg 5. PR interval greater than 0.24 seconds 6. 2nd- and 3rd-degree heart block or bifascicular heart block 7. Asthma

ELEMENT	DEFINITION
Calcium channel blockers	Calcium channel blockers administered. Some generic forms of calcium channel blockers include verapamil, nifedipine, diltiazem, nicardipine, nimodipine, nisoldipine, felodipine, and amlodipine.
Aspirin	Aspirin administered
• Aspirin—contraindications	1. True allergy to aspirin 2. Active bleeding
Clopidogrel/ticlopidine	Clopidogrel or ticlopidine administered
Other antiplatelet agents	Another antiplatelet agent, not listed above, administered (e.g., dipyridamole)
GP IIb/IIIa blockers	GP IIb/IIIa blockers administered. Note the exact drug used. Available drugs are abciximab, eptifibatide, tirofiban, trial-based GP IIb/IIIa blocker (i.e., not listed above or randomized blindly between 2 agents), or other.
Antithrombin agents	Antithrombin agent administered. Available drugs are unfractionated heparin, low-molecular-weight heparin (enoxaparin, dalteparin, nadroparin, danaparoid, hirudin, and bivalirudin), trial-based antithrombin agent (i.e., not listed above or randomized blindly between 2 agents), or other.
Warfarin	Warfarin (or coumarol, coumarin) administered
Female hormone replacement therapy	Female hormone replacement therapy administered
Nicotine replacement therapy	Nicotine replacement agents administered (e.g., buproprion)
Antiarrhythmics	Antiarrhythmic drug administered. Some common drugs are amiodarone, sotalol, quinidine, procainamide, and lidocaine.
ACE inhibitors	ACE inhibitors administered. Some common generic forms include captopril, enalapril, lisinopril, and ramipril.
• ACE inhibitors—contraindications	1. Allergy or intolerance (e.g., cough) to ACE inhibitors 2. Moderate to severe aortic stenosis 3. Bilateral renal artery stenosis 4. History of angioedema, hives, or rash in response to ACE inhibitors 5. Hyperkalemia 6. Symptomatic hypotension 7. Severe renal dysfunction
Angiotensin II receptor blocker (ARB)	ARBs administered. Common forms are losartan, valsartan, and candesartan.
Diuretics	Diuretics administered. Some commonly prescribed agents are furosemide, ethacrynic acid, hydrochlorothiazide, spironolactone, metolazone, and bumetanide.
Digitalis	Digitalis administered. Some common generic forms include digoxin and digitoxin.
Lipid-lowering agents	Lipid-lowering agent administered. Note the type of agent: 1. Statin (HMG Co-A reductase inhibitors) 2. Fibrates 3. Nicotinic acid 4. Resin drugs 5. Other Frequently prescribed drugs are atorvastatin, simvastatin, pravastatin, fluvastatin, lovastatin, cholestyramine, colestipol, probucol, and gemfibrozil.

Outcomes

Death	Patient died during this hospitalization. Date should be noted.

MI	To meet the criteria as a postadmission event, an MI must be distinct from the index event at the time of admission (i.e., reinfarction for a patient who was admitted to the hospital with an MI). Date and time should be noted.
	
	MI is defined by the ESC/ACC definition below. In addition 2 different subcategorizations of MI are further specified as follows:
	
	1. ST vs. non–ST-segment elevation MI
	  a. ST-elevation MI vs.
	  b. Non–ST-elevation MI vs.
	  c. BBB/uncertain
	
	And
	
	2. Q-wave vs. non–Q-wave MI

ELEMENT	DEFINITION
MI (continued)	

    a. Q wave
    b. Non-Q-wave MI
    c. BBB/Uncertain

ESC/ACC DEFINITION OF MI (15)

Either one of the following criteria satisfies the diagnosis for an acute, evolving, or recent MI:

1. Typical rise and gradual fall (troponin) or more rapid rise and fall (CK-MB) of biochemical markers of myocardial necrosis (see further description of *Biochemical Marker Evidence of MI below) with at least 1 of the following:
    a. Ischemic symptoms
    b. Development of pathological Q waves on the ECG (for further description, see ‡Classification of Q-Wave vs. Non–Q-Wave MI below)
    c. ECG changes indicative of ischemia (ST-segment elevation or depression; for further description, see †Classification of STEMI vs. Non-STEMI)
    d. Coronary artery intervention (e.g., coronary angioplasty)

Or

2. Pathological findings of an acute MI

* <u>**Biochemical marker evidence of MI.**</u> The following are biochemical indicators for detecting myocardial necrosis (see below for a definition of reference control limits):
    1. Troponin T or I: Maximal concentration of troponin T or I greater than the MI decision limit on at least 1 occasion during the first 24 hours after the index clinical event
    2. CK-MB:
        a. Maximal value of CK-MB, preferably CK-MB mass, greater than upper limit of normal on 2 successive samples
        b. Maximal value of CK-MB greater than 2 times the upper limit of normal on 1 occasion during the first hours after the index clinical event

Or

    3. Total CK: In the absence of availability of a troponin or CK-MB assay, total CK greater than 2 times the upper limit of normal, or the B fraction of CK may be used, but these last 2 biomarkers are considerably less satisfactory than CK-MB

<u>Defining reference control values (MI diagnostic limit and upper limit of normal):</u> Reference values must be determined in each laboratory by studies using specific assays with appropriate quality control, as reported in peer-reviewed journals. Acceptable imprecision (coefficient of variation) at the 99th percentile for each assay should be defined as less than or equal to 10%. Each individual laboratory should confirm the range of reference values in their specific settings.

<u>Special circumstances (for all types of MI):</u>
- *For patients with admission MI,* the CK-MB value associated with the recurrent MI must be increased by at least 50% of the previous value (i.e., a re-elevation of cardiac markers)
- *For patients with MI within 24 hours after PCI,* the CK-MB (or CK if MB not available) must be greater than or equal to 3 times the upper limit of normal. No ECG changes or symptoms are required.
- *For patients with MI within 24 hours after CABG,* the CK-MB (or CK if MB not available) must be greater than or equal to 5 times the upper limit of normal, and new Q waves must be present as defined above, or CK-MB value must be greater than or equal to 10 times the upper limit of normal (with or without Q waves). No symptoms are required.
- *For patients who die* and for whom no cardiac markers were obtained, the presence of new ST-segment elevation and new chest pain would meet criteria for MI

† <u>**Classification of ST-elevation MI (STEMI) vs. non-STEMI**</u>. The patient should manifest a typical rise and gradual fall (troponin) or more rapid rise and fall (CK-MB) of biochemical markers of myocardial necrosis (see "Biochemical marker evidence of MI" above), and
    1. <u>STEMI.</u> ST-segment elevation: New or presumed new ST-segment elevation at the J point in 2 or more contiguous leads with the cutoff points greater than or equal to 0.2 mV in leads V1, V2, or V3, or greater than or equal to 0.1 mV in other leads

Or

    2. <u>NSTEMI.</u> Either of the following (in the absence of ST elevation):
    a. ST-segment depression or T-wave abnormalities
    b. Ischemic symptoms in the presence or absence of chest discomfort. Ischemic symptoms may include:
        (1) unexplained nausea and vomiting or diaphoresis
        (2) persistent shortness of breath secondary to left ventricular failure
        (3) unexplained weakness, dizziness, lightheadedness, or syncope

ELEMENT	DEFINITION

MI (continued)	Or
	
	3. <u>BBB/uncertain type</u>: Either of the following:
	
	    a. Left BBB (new or old) or paced rhythm that obscures assessment of ST elevation. (If definite new ST elevation can be identified compared with an old ECG, then STEMI should be the classification.)
	
	    b. If the initial ECG findings are not available or the patient presents beyond the time of ST-segment changes (e.g., greater than 24 hours), classify as uncertain type
	
	‡ **Classification of Q-wave vs. non–Q-wave MI**. The patient should manifest the typical rise and gradual fall (troponin) or more rapid rise and fall (CK-MB) of biochemical markers of myocardial necrosis (see "Biochemical marker evidence of MI" above), and
	
	1. <u>Q-wave MI</u>: Development of any Q wave in leads V1 through V3, or the development of a Q wave greater than or equal to 30 ms (0.03 s) in leads I, II, aVL, aVF, V4, V5, or V6. (Q-wave changes must be present in any 2 contiguous leads and be greater than or equal to 1 mm in depth.)
	Or
	2. <u>Non–Q-wave MI</u>: The absence of new Q waves as defined above on ECGs performed at least 12 hours after the event
	Or
	3. <u>BBB/uncertain type of MI</u>: Left BBB (new or old) or paced rhythm that obscures assessment of Q waves

Recurrent rest angina with ECG changes	Recurrent ischemic pain occurring at rest (and believed to be cardiac in origin) with associated ECG changes
Recurrent rest angina without ECG changes	Recurrent ischemic pain occurring at rest (and believed to be cardiac in origin) without associated ECG changes
Bleeding (TIMI major, TIMI minor, or none)	An episode of bleeding is defined by the TIMI criteria as: 1. Major: Overt clinical bleeding (or documented intracranial or retroperitoneal hemorrhage) associated with a drop in hemoglobin of greater than 5 g/dl (0.5 g/l) or in hematocrit of greater than 15% (absolute) Note: A patient who experiences an intracranial hemorrhage should be considered to have a major hemorrhage. 2. Minor: Overt clinical bleeding associated with a fall in hemoglobin of 3 to less than or equal to 5 g/dl (0.5 g/l) or in hematocrit of 9% to less than or equal to 15% (absolute) 3. None: No bleeding event that meets the major or minor definition Note: In calculating the fall in hemoglobin or hematocrit, a transfusion of whole blood or packed red blood cells is counted as 1 g/dl (0.1 g/l) hemoglobin or 3% absolute in hematocrit. This would be in addition to the actual fall in hemoglobin or hematocrit.
Location of bleeding	Categories for the location of bleeding are: • cardiac catheterization site • CABG surgical site (e.g., chest tubes, sternal wound) • other instrumented site • gastrointestinal site • other (noninstrumented) site
Transfusion	Transfusion of either whole blood or packed red blood cells due to a hemorrhagic event. Note the number of units transfused.
Stroke	A stroke or CVA with loss of neurological function caused by an ischemic or hemorrhagic event with residual symptoms at least 24 hours after onset or leading to death
Type of stroke	Indicate the type of stroke: 1. Hemorrhagic: A stroke with documentation on imaging (e.g., CT scan or MRI of hemorrhage in the cerebral parenchyma, or a subdural or subarachnoid hemorrhage). Evidence of hemorrhagic stroke obtained from lumbar puncture, neurosurgery, or autopsy can also confirm the diagnosis. 2. Nonhemorrhagic: A focal neurological deficit that results from a thrombus or embolus (and not due to hemorrhage) that appears and is still partially evident for more than 24 hours 3. Unknown/no imaging performed: if the type of stroke could not be determined by imaging or other means (from lumbar puncture, neurosurgery, or autopsy)
Transient ischemic attack (TIA)	A focal neurological deficit (usually corresponding to the territory of a single cerebral vessel) that resolves spontaneously without any evidence of residual deficit at 24 hours

ELEMENT	DEFINITION
Thrombocytopenia	Platelet count dropped to either less than 50,000/mm^3 or between 50,000 and less than 100,000/mm^3; the level should be noted. This platelet count should be confirmed as not being pseudothrombocytopenia (i.e., platelet clumping in citrated blood).
CHF	Developed evidence of new CHF after admission • None (absence of rales over the lung fields) • Mild CHF (rales over 50% or less of the lung fields). Evidence of new pulmonary vascular congestion on chest radiograph also meets the definition. • Severe CHF (rales over more than 50% of the lung fields). Evidence of pulmonary edema on chest radiograph would also meet this definition.
Cardiogenic shock	Experienced cardiogenic shock. Clinical criteria for cardiogenic shock are hypotension (a systolic blood pressure of less than 90 mmHg for at least 30 minutes or the need for supportive measures to maintain a systolic blood pressure of greater than or equal to 90 mmHg), end-organ hypoperfusion (cool extremities or a urine output of less than 30 ml/h, and a heart rate of greater than or equal to 60 beats per minute). The hemodynamic criteria are a cardiac index of no more than 2.2 l/min per square meter of body-surface area and a pulmonary-capillary wedge pressure of at least 15 mmHg (34).
Cardiac rupture/ventricular septal defect	Rupture of the ventricular myocardium, as documented by cardiac echocardiography, ventriculography, pericardiocentesis, cardiac surgery, and/or autopsy. Rupture could be of the free wall or the ventricular septum. Included in this category is frank papillary muscle rupture.
Atrial arrhythmia	A new episode or acute recurrence of atrial arrhythmia documented by 1 of the following: 1. Atrial fibrillation/flutter 2. Supraventricular tachycardia requiring treatment (supraventricular tachycardia that requires cardioversion, drug therapy, or is sustained for greater than 1 minute)
Ventricular arrhythmia	Ventricular tachycardia or ventricular fibrillation requiring cardioversion and/or intravenous antiarrhythmics
High-degree atrioventricular (AV) block	High-level AV block defined as third-degree AV block or second-degree AV block with bradycardia requiring pacing
Date of discharge	Date the patient was discharged from the acute care hospital. If the patient died in the hospital, the hospital discharge date is the date of death.
Discharge destination	Location the patient was discharged to upon leaving this hospital. The choices are: 1. Home 2. Nursing home or personal care residence 3. Another nonacute care or rehabilitation hospital 4. Another acute care hospital 5. Death in hospital
Smoking cessation counseling	Advice or a pamphlet was given or a discussion was conducted with the patient (by physician, nurse, or other personnel) regarding the importance of stopping smoking
Weight management counseling	Advice given or counseling conducted by a physician or nurse in patients greater than 120% of ideal weight for height. Particular emphasis for weight loss may be given for patients with hypertension, elevated triglycerides, or elevated glucose levels.
Diet counseling	Advice given or discussion conducted by a physician or nurse encouraging diet counseling. This can include low cholesterol foods; moderate sodium restriction; emphasis on fruits, vegetables, and low-fat dairy products; and increased consumption of omega-3 fatty acids.
Exercise counseling	Advice given or discussion conducted by a physician or nurse encouraging patients to engage in a minimum of 30 to 60 minutes of physical activity daily or at least 3 to 4 times weekly.
Cardiac rehabilitation	Advice given or discussion conducted with the patient (by physician, nurse, or other personnel) regarding the importance of joining a cardiac rehabilitation program, or an appointment made
Days in ICU	Total number of days the patient spent in an intensive care bed at the index hospital only, either consecutively or intermittently. To count days: 1. Find the ICU/CCU admit date/time and the date/time patient was transferred out to another unit (telemetry or unmonitored bed) 2. For every 24-hour period, count 1 day 3. For any partial day remaining, round up if greater than or equal to 12 hours and round down if less than 12 hours In the case of an in-hospital infarct in which the patient is already in an intensive care bed, record the number of days spent in ICU/CCU after the diagnosis of MI was made.
Final diagnosis of the admission event	The final diagnosis for the event that prompted admission:

ELEMENT	DEFINITION
	1. <u>STEMI</u> is defined as an ACS in which there is cardiac marker evidence of myocardial necrosis (e.g., positive CK-MB) and new (or presumably new if no prior ECG is available) ST-segment elevation on the admission ECG. (For a complete definition, please refer to "MI" in the "Outcomes" section.)
	2. <u>NSTEMI</u> is defined as an ACS in which there is cardiac marker evidence of myocardial necrosis (e.g., positive CK-MB or troponin) without new ST-segment elevation. (For a complete definition, please refer to "MI" in the "Outcomes" section.)
	3. <u>BBB/uncertain type</u>. For a complete definition, please refer to "MI" in the "Outcomes" section.
	4. <u>Unstable angina</u> is defined as angina pectoris (or equivalent type of ischemic discomfort) with any 1 of the 3 following features: a. Angina occurring at rest and prolonged, usually greater than 20 minutes b. New-onset angina of at least CCS classification III severity c. Recent acceleration of angina reflected by an increase in severity of at least 1 CCS class to at least CCS class III The patient must also not have any biochemical evidence of necrosis. a. <u>Definite/probable unstable angina</u>: Patients with clinical history consistent with the diagnosis of unstable angina as described above, in whom ischemia has been confirmed by the presence of ST-segment changes on the initial ECG or in association with recurrent rest pain, by a positive stress test, or by the presence of small elevations of troponin that do not meet criteria for MI b. <u>Possible unstable angina</u> is present when an acute ischemic process has not been excluded as a possible cause of the presenting symptoms, or the clinical history is consistent with unstable angina but no diagnostic test (noted above) was performed to confirm the diagnosis
	5. <u>Stable CAD:</u> The patient has a clinical diagnosis or prior history of CAD, but after evaluation in the hospital, the episode of discomfort was not thought to have represented unstable angina
	6. <u>Noncardiac chest pain</u>: Pain in the chest, neck, or arms or abdomen (or other clinical manifestation) not clearly exertional or not otherwise consistent with pain or discomfort of myocardial ischemic origin
	Examples: 1. If a patient was admitted with rest pain but had negative cardiac markers, then on day 3 developed recurrent pain, and it was determined that an MI had occurred, the event prompting admission should be coded as "unstable angina" here. The MI on day 3 should be recorded in the "Outcomes" section as a postadmission MI. 2. If a patient was admitted with rest pain and initial cardiac markers were negative, but the enzymes drawn over the subsequent 24 hours became positive, this is most consistent with an NSTEMI as the admission event.
Follow-up Measures	*These elements are believed to be the most important outcomes to monitor in patients with ACS. The timing could be flexible, but the most common time points are 30 days, 6 months, and/or 1 year.*
Death	The patient died since the previous visit/contact. This category includes all deaths regardless of cause of death.
• Primary cause (cardiovascular vs. noncardiovascular)	1. Cardiovascular death indicates cause of death was sudden cardiac death, MI, unstable angina, or other CAD; vascular death (e.g., stroke, arterial embolism, pulmonary embolism, ruptured aortic aneurysm, or dissection); CHF; or cardiac arrhythmia 2. Noncardiovascular death indicates cause of death was respiratory failure, pneumonia, cancer, trauma, suicide, or any other already defined cause (e.g., liver disease or renal failure)
MI	Documented evidence of an MI. For a complete definition, please refer to "MI" in the "Outcomes" section.
Cardiac catheterization	Cardiac catheterization (with or without revascularization) procedure performed since the previous visit/contact
PCI	PCI performed since the previous visit/contact
CABG	CABG performed since the previous visit/contact
Readmission	Readmission to a hospital
Readmission reason	Reasons for admission (include all that apply): 1. MI (documented) 2. Unstable angina 3. Angina (without MI) 4. PCI 5. CABG 6. CHF (without MI) 7. Arrhythmia or conduction disturbance (without MI)

ELEMENT	DEFINITION
	8. Other cardiovascular problem 9. Noncardiovascular problem
Angina status	CCS classes of angina (35): I. Ordinary physical activity (for example, walking or climbing stairs) does not cause angina; angina occurs with strenuous or rapid or prolonged exertion at work or recreation II. Slight limitation of ordinary activity (for example, angina occurs walking or stair climbing after meals, in cold, in wind, under emotional stress, or only during the few hours after awakening; walking more than 2 blocks on the level or climbing more than 1 flight of ordinary stairs at a normal pace; and in normal conditions) III. Marked limitation of ordinary activity (for example, angina occurs with walking 1 or 2 blocks on the level or climbing 1 flight of stairs in normal conditions and at a normal pace) IV. Inability to perform any physical activity without discomfort; angina syndrome may be present at rest
Medication use	1. Antiplatelet: Aspirin, clopidogrel, or ticlopidine; other (e.g., dipyridamole) 2. ACE: Some common generic forms include captopril, enalapril, lisinopril, and ramipril 3. Beta-blocker: Some forms of IV beta-blockers include atenolol, metoprolol, propranolol, timolol, esmolol, and labetalol. Some generic forms of oral beta-blockers include atenolol, metoprolol, nadolol, pindolol, propranolol, timolol, acebutolol, bucindolol, bisoprolol, labetalol, and carvedilol. 4. Lipid lowering: Type of agent includes statin (HMG Co-A reductase inhibitors), fibrates, nicotinic acid, resin drugs (cholestyramine). Frequently prescribed drugs are cholestyramine, colestipol, probucol, gemfibrozil, lovastatin, atorvastatin, simvastatin, fluvastatin, pravastatin, and cerivistatin. A complete listing of cardiac medications could also be collected.

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