Cardiology Audit and Registration Data Standards for Coronary Care Unit [CCU]/Acute Coronary Syndrome [ACS] admissions.

A Report of the CARDS Expert Committee on Acute Coronary Syndromes

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FOREWARD

During Ireland's Presidency of the European Union (EU) (January to June 2004), the Department of Health and Children in Ireland worked with the European Society of Cardiology, the Irish Cardiac Society and the European Commission to develop data standards for use in clinical cardiology. The Cardiology Audit and Registration Data Standards (CARDS) Project aimed to agree data standards for three modules of cardiovascular health information systems, viz. - acute coronary syndromes (ACS), percutaneous coronary interventions (PCI), and clinical electrophysiology (EP) (pacemakers, implantable cardioverter defibrillators and ablation procedures).

A Coordination Committee and three multidisciplinary Expert Committees were established to develop the data standards, for use throughout the Europe, for each of the three modules. All existing databases, registries and surveys data sets were obtained, scrutinised very carefully and compiled into one large matrix for each of the modules. The main objective of each of the Expert Committees was to produce standardised data sets limited to less than 100 variables. The variables derived had to reflect current treatment guidelines, and also were to be of use for clinical audit, clinical care of patients, service planning and epidemiology. The process involved regular meetings of the Expert Committees, electronic communication between members, and consultation with specialist groups and cardiac societies represented by the European Society of Cardiology. The development of the draft data standards for the three modules was completed in April 2004.

These draft data standards were reviewed, discussed and formally adopted at a conference involving EU Member States in Cork, Ireland, in May 2004. Members of the Expert Committees have carried out pilot tests within their own institutions to test the clarity and feasibility of using the data standards. The data standards and accompanying descriptive information will be disseminated to stakeholders throughout Europe from September to December 2004. The European Society of Cardiology will act as steward in this initiative.

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1.1 Description of the CCU/ACS Data Standards

These are data standards for use in coronary care units to record information about patients admitted with a possible or definite acute coronary syndrome (ACS).

1.2 Description of the CCU/ACS data standard structure

The data standards are set out under headings, as follows:

1. **Field ID Number** – each data field has an identification number. Data items that are common to the three modules [CCU/ACS, PCI and EP] have the same Field ID Number.

2. **Field name** – this is a prompt or title for the field that could be used on a data entry form or screen, for example *Date of birth.*

3 & 4. **Field content** – the field may have options. These contain two types of items for coding. It contains a **short numerical code** for classification and also a **short string** again identifying a classification. For example the data field Sex has the options (1) Male, (2) Female and (9) Unknown, the numerical codes are (1), (2) and (9) and the short string include male, female and unknown.

5. **Definition of field** – This is a description/explanation of the field name.

6. **Definition of field options** - This is a definition of the field content

7. **Data format** – this identifies the field's format. Example of formats include date, date and time, numeric, text single value and text multiple values. The classification used can be seen in appendix 2.

1.3 Source documents used to develop the CCU/ACS Data Standards

Source documents included national and international registers and internationally recognised guidelines. Below is a list of the national and international databases, registers, surveys and guidelines that were used to compile the coronary care unit/ acute coronary syndrome matrix from which the data standards were derived. A brief description of some of the sources is given in section 1.6.

Databases, Registries and Surveys

- Coronary Heart Attack Ireland Register (**CHAIR**)
- Global Registry of Acute Coronary Events (**GRACE**)
- Myocardial Infarction National Audit Project (**MINAP**)
- Register of Information and Knowledge about Swedish Intensive Care Admissions **(RIKS-HIA)**
- Spanish Register of Acute Myocardial Infarction **(PRIAMHO II)**
- Spanish Register for patients over 75 with first MI **(PPRIMM75)**
- Spanish Register for Non ST Elevation MI **(DESCARTES)**
- Spanish Register on STEMI patients treated with primary angioplasty **(TRIANA 1)**
- Spanish Register on STEMI/LBBB AMI patients ≥ 75 years not treated with primary angioplasty **(TRIANA -2)**
- Euro Heart Survey on Acute Coronary Syndrome
- Portugal's Acute Coronary Syndrome Register
- Acute Coronary Syndrome Registry International **(ACOS)**
- Italy's Acute Coronary Syndrome Register
- Israel's Acute Coronary Syndrome Register
- French Acute Coronary Syndrome Register

Guidelines and Reference Guides (see section 1.6)

- European Society of Cardiology (**ESC**) Guidelines: Management of AMI in patients presenting with ST Elevation (2003)
- European Society of Cardiology (**ESC**) Guidelines: Management of AMI in patients presenting without ST Elevation (2002)
- American College of Cardiology (**ACC**) Clinical Data Standards – Reference Guide

1.4 Priority Ratings

Priority rating refers to the overall importance of the variable to be collected in relation to the following objectives: -

- Clinical audit
- Service planning and funding agencies
- Epidemiological research

Variables to be collected are to be considered under three priority groupings, viz.

High - these variables are of prime importance in relation to the above objectives

NB - the variables in this group are essential components of a minimum core data set and include variables without which the data would be considered useless, e.g. sex, age, diagnosis. These variables include those, which would be essential in order to link up with other cardiovascular disease surveillance datasets.

Medium – these would help build up a complete picture of the patient but would not necessarily alter the definitive care of the patient.

Low – these are variables that do not impact on patient care in CCU or in hospital prior to discharge. They would help complete the information in relation to the event leading to admission to CCU. However, they may in the future be available from other cardiac disease information surveillance modalities, e.g. cardiac rehabilitation, general practitioner (GP) surveys. These variables would be considered of least importance to meet the objectives of collecting the data.

NOTE: All data items are seen as high priority unless otherwise stated. Data items deemed as medium priority are marked MP and low priority data items are marked as LP in the field ID number.

1.5 Data standards sections

The data standards are subdivided into the following sections:

- **Demographics**: the demographic section contains data fields such as date of birth and sex.

- **History [relevant to Coronary Artery Disease, CAD]**: includes data on the patient's previous medical history, such as previous myocardial infarction. It also includes data fields for previous interventions and procedures, such as percutaneous coronary interventions (PCI), and coronary artery bypass graft (CABG).

- **Risk factors [relevant to Coronary Artery Disease, CAD]**: the risk factor section contains data fields for current risk factors relating to CAD, for example smoking, hypertension and hyperlipidemia.

- **Medication: pre hospital**: this captures information on the patient's long-term use of medication.

- **Working diagnosis**: this section records data on ECG findings, CK/CKMB and troponin levels to provide a working diagnosis.

- **Investigations and treatment**: this includes data on investigations that the patient underwent during his/her admission, for example stress test. It also focuses on revascularisation i.e. thrombolysis, PCI and CABG.

- **Medication: during hospital stay**: this section collects data on the medication that was administered during this hospital stay.

- **Outcome**: this captures data on the immediate outcome after the acute event. For example, did the patient experience a stroke, a major bleed, or did the patient have any serious complications as a result of an acute myocardial infarction, e.g. cardiac arrest?

- **Medication: discharge**: includes data items on medication at discharge from hospital.

- **Follow up**: this section captures information on whether the patient is dead /alive at the time of follow-up. This section also captures data on readmission to hospital, patient's present status, major adverse coronary events and medication at follow-up.

1.6 Description of registers and databases

The following is a description of **some** of the national and international databases, registers and surveys used to make up the data standards. A brief description is given for each of the examples under the headings: devised by, type, details on data set and coverage.

Coronary Heart Attack Ireland Register (CHAIR)

Devised by: This register began as a pilot project in 2002. The Southern Health Board (SHB) is facilitating the pilot in the SHB area of Cork and Kerry, under the guidance of the National Cardiovascular Information Systems Steering Committee [NCIS]

Type: This is a computer-based system and collects data on all patients admitted to an acute hospital with a suspected or confirmed acute coronary syndrome (myocardial infarction or unstable angina). At a local level all data collection is completed by dedicated CHAIR registration officers (full time or part-time) who are trained in the database and are experienced in cardiology and medical records. Certain CHAIR data (where the patient cannot be identified) are then sent every few days to a central database by a data/phone line.

Details on data set: 100 variables (patient demographics, admission details, thrombolysis details, risk factors, procedures, investigations, discharge medications and discharge details).

Coverage: 20% coverage. Operating as a pilot in 8 of the 40 acute hospitals (public, voluntary and private) with coronary care facilities in the Republic of Ireland.

Global Register of Acute Coronary Events (GRACE)

Devised by: During the summer of 1997 several cardiologists and representatives from Aventis Pharma began discussions about setting up a research study into the management and outcomes of patients experiencing an acute coronary event. Aventis Pharma, which produces antithrombotic medicine, sponsors GRACE. GRACE was officially launched in Barcelona, Spain in 1999. GRACE is a prospective, multinational, observational registry that is collecting data on acute coronary event patients. The overall purpose of GRACE is to capture, analyse and disseminate data on the complete spectrum of patients experiencing acute coronary syndromes (ACS) including long-term follow-up.

Type: Data is collected at each registry hospital by a designated study coordinator who has been trained to abstract and record data on the clinical record form [CRF]. Unique identifiers are removed from data prior to transmission to the study coordinating centre, to protect the confidentiality of patients, physicians and hospitals.

Details on data set: The data set is quite extensive and covers patient demographics, admission details, thrombolysis details, risk factors, procedures, investigations, discharge medications, discharge details and follow-up.

Coverage: Approximately 100 centres in 14 countries take part in this registry. At the end of 2000, over 11,000 patients had been enrolled. The study is anticipated to go on to enrol approximately 10,000 patients annually. The 14 countries are as follows; Argentina, Australia, New Zealand, Austria, Belgium, Brazil, Canada, France, Germany, Italy, Poland, Spain, United Kingdom and the United States

Myocardial National Audit Project (MINAP)

Devised by: MINAP was set up in response to the National Service Framework (NSF) for Coronary Heart Disease (CHD). It collects data to allow clinicians to examine the management of patients with myocardial infarction, and to assess whether their hospitals are meeting the standards set by the NSF for CHD. The project is funded by the National Institute for Clinical Excellence (NICE) and is based on a working collaboration with the Central Cardiac Audit Database (CCAD).

Type: CCAD has developed a secure data transmission system that allows the linkage of local cardiac databases to a central processing facility capable of analyzing and returning reports to contributing hospitals.

Details on data set: Collects data on the following: identifier, administration information, condition, intervention, short-term outcome, major known confounders, and long-term outcome.

Coverage: England and Wales. 92% (217/236) of hospitals submit data to MINAP. The remaining hospitals collect data but do not yet submit it to MINAP.

Register of Information and Knowledge about Swedish Intensive Care Admissions (RIKS-HIA):

Devised by: This register was set up in 1992. The health authority responsible for the register is Uppsala County Council.

Type: This is a computer-based system; it collects data on all patients admitted for cardiac intensive care in cardiac intensive care units in Swedish hospitals. At a local level the nurses and physicians fill in all data at the time of procedure. Data were sent yearly to the national database by diskette or email, but the system is now internet based, with interactive capabilities.

Details on data set: 115-180 variables (admission, care in CCU, and continued care and discharge)

Coverage: 90% of the country's cardiac intensive care units at the participating hospitals

Spanish Register of Acute Myocardial Infarction (PRIAMHO II) [Proyecto de Registro de Infarto Agudo de Miocardio Hospitalario]

Devised by: the Spanish Society of Cardiology promoted this study in 1994.

Type: This was a paper-based cohort study with one-year follow-up.

Details on data set: The data set consists of details on demographic and clinical characteristics of the patients, their management during the coronary care unit stage, and the outcome and complications.

Coverage: All the myocardial infarction patients admitted to the coronary care units of 33 Spanish hospitals were registered during 1995 and 2000. All survivors were followed over one year.

(PPRIMM75) [Pronóstico del Primer Infarto de Miocardio en Mayores de 75 años]- Spanish Register for patients over 75 years with first Myocardial Infarction

Devised by: The Hospital General Universitario "Gregorio Marañón", Madrid in October 1998, set up this register.

Type: This is a prospective single-centre register of all consecutive patients ≥75 years old admitted to the coronary care unit for a first acute myocardial infarction.

Details on data set: This register collects data on patient's demographics, cardiovascular history, risk factors, admission details, ECG details, therapy, diagnostic and therapeutic procedures and extensive coverage of clinical outcome during hospitalisation. It registers data on long-term follow-up, which is periodically updated.

Coverage: PPRIMM75 has enrolled more than 1000 consecutive patients ≥75 years old with a first AMI and follow-up has been completed from 1988 to 2003.

(DESCARTES) [Descripción del Estado de los Síndromes Coronarios Agudos en un Registro Temporal Español] -Spanish Register for NSTEMI (Non ST Elevation Myocardial Infarction)

Devised by: The Spanish Society of Cardiology Working Group on Ischemic Heart Disease and Coronary Care Units devised this register. Registration of patients took place between April and May, 2002. 2,017 patients were registered during this study.

Type: This is a computer-based system that transmits data to a central national database from the participating hospitals.

Details on data set: The register collects details on demographic, past history, risk factors and clinical characteristics of the patients, their clinical management and outcomes during hospitalisation and 6-month follow-up (vital status and hospital re-admissions).

Coverage: Nationwide prospective register of consecutive NSTEMI admissions in 55 hospitals randomly selected from a national database of hospitals classified in three strata:

- Centres with coronary care units and catheterisation laboratories,
- Centres with coronary care units or intensive care units but not catheterisation laboratories
- Centres without centres with coronary care units or intensive care units or catheterisation laboratories.

(TRIANA) [Tratamiento del Infarto de Miocardio eN el Anciano] - Spanish Register on Management of ST elevation Myocardial Infarction (STEMI) in the elderly

Devised by: The Working Group on Ischemic Heart Disease and Coronary Care Units, the Working Group on Haemodynamic & Interventional Cardiology, and the Spanish Society of Cardiology devised this register. TRIANA was designed as a study to address the viability of performing a Spanish multi-centre randomised trial comparing primary angioplasty and thrombolysis for the management of STEMI in patient's ≥75 years old.

Type: Nation-wide register that collected data on patients with STEMI admitted to a Spanish centre/hospital with active programs of primary angioplasty (25 centres that had performed >25 AMI-related procedures during the past year participated). It has two sub-registers:

TRIANA 1: Register of consecutive STEMI patients (of any age) who under went primary or rescue angioplasty for STEMI.

TRIANA 2: Register of consecutive patients aged 75 years or older admitted to those hospitals for STEMI, who were not treated with primary angioplasty.

Details on data set: Two separate paper-based CRFs were designed for each sub-register that included common variables regarding demographics, past history, risk factors, medical management, hospital outcomes and 12-month follow up and specific variables of interest for primary angioplasty (TRIANA1) and medical reperfusion therapy (TRIANA2).

Coverage: TRIANA 1 registered 459 patients (all ages) who underwent primary or rescue angioplasty between March 18th 2002 and June 15th, 2002. TRIANA 2 enrolled 306 patients' ≥75 years old with STEMI who were admitted to the centres/hospitals with active primary angioplasty programs, and were treated with thrombolytic therapy or did not receive reperfusion therapy from March 18th 2002 to July 31st 2002.

American College of Cardiology (ACC) Clinical data standards – reference guide

Devised by: members of the American College of Cardiology (ACC) Database Research and Development Committee, in conjunction with the ACC staff, devised this document. This was then approved by the ACC Board of Trustees in November 2001 and published December 2001.

Type: This is a multipurpose reference guide to accompany the publication of the ACC Key Data Elements and Definitions for Measuring the Clinical Management and Outcomes of Patients with Acute Coronary Syndromes clinical data standards. The intent of this document is to provide a resource that

maps common data fields between ACS core elements and other national/regional data registries, links ACS core elements to relevant ACC/AHA guidelines, and identifies potential use for each core element.

Details on reference guide: The reference guide collects data under the following headings:

- **Element**: ACS core element name
- **Definition**: ACS core element definition
- **National Registries**: Maps to other national databases or registries that have used this data element
- **Reference:** Links to published ACC/AHA practice guidelines and other key resources
- **Use**: List of ways to use each data element i.e. risk adjustment, clinical risk factors, procedural measurement, follow up etc.

Euro Heart Survey on Acute Coronary Syndrome

Devised By: Devised by members of the European Society of Cardiology to better delineate the characteristics, treatments, and outcomes of patients with acute coronary syndromes (ACS) in representative countries across Europe and the Mediterranean basin, and to examine adherence to current guidelines. This survey was carried out between 2000-2001

Type: Initially paper-based, Euro Heart Surveys now transmit data electronically to the central organisation centre for the particular topic. This survey was distributed to 103 centres in 25 countries between 2000-2001.

Coverage: A prospective survey (103 hospitals, 25 countries) of 10,484 patients with a discharge diagnosis of acute coronary syndromes.

Portugal's Acute Coronary Syndrome Register

Devised by: This register was set up in 2002. The organisation responsible for the register is the Portuguese Society of Cardiology.

Type: This is a computer-based system. It collects data on all patients admitted in Portuguese hospitals. At a local level physicians fill in all data at the time of procedure. Data is then sent to a national coordinating center where the CRFs are electronically translated into a database.

Details on data set: 110-130 variables (admission, care in CCU, continued care and discharge, and 6 months follow-up)

Coverage: more than 80% of the country's hospitals with at least one cardiologist.

1.7 References

The main reference documents consulted to define clinical data standards are: -

1. ESC: European Society of Cardiology Guidelines (Task Force Reports)

'Management of acute coronary syndromes in patients presenting without persistent ST-segment elevation.' *European Heart Journal 2002: 23; 1809 – 40 (218 references)*.

This is a revision of a previous Task Force Report 'Management of acute coronary syndromes: acute coronary syndromes without persistent ST segment elevation' *European Heart Journal 2000:21; 1406 – 1432.*

2. ESC: European Society of Cardiology Guidelines

'Management of acute myocardial infarction in patients presenting with ST-segment elevation.' *European Heart Journal 2003:24; 28-66 (235 references)*

3. ACC Clinical Data Standards – Reference Guide "American College of Cardiology Key Data Elements and Definitions for measuring the Clinical Management and Outcomes of Patients with Acute Coronary Syndromes" http://www.acc.org/clinical/data_standards/ACS/acs_index.htm

CCU/ACS Data Standards

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Demographics						
ACS 1.01	Hospital identification number			Indicate the hospital identification number.		Id an100
ACS 1.02	Patient identification number			Indicate the patient identification number.		Id an100
ACS 1.03	Date of birth			The date the patient was born as recorded on their birth certificate.		Date
ACS 1.04	Sex	1	Male	The sex of the patient.		Code n2
		2	Female			
		99	Unknown		Information missing.	
ACS 1.05	Height			Height in cms.		n3
ACS 1.06	Weight			Weight in kgs.		n3.1
ACS 1.07	Transferred from another hosptial	1	No	Indicate if the patient was transferred from another hospital for this admission		Code n2
		2	Yes			
		99	Unknown		Information missing.	
Past History relevant to Coronary Artery Disease - Previous history may be documented in the patient's medical notes, GP letter or other referral letters or the patient or the patient's family may have positive information from medical professionals that confirm history.						
ACS 2.01	History of previous myocardial infarction (MI)	1	No	Indicate if the patient had at least one previous myocardial infarction before this admission.	Patient has no history of a previous myocardial infarction.	Code n2
		2	Yes		Patient had at least one myocardial infarction previously.	
		99	Unknown		Information missing.	
ACS 2.02	Prior angina	1	No	Indicate if the patient has a history of angina and / or has been treated previously for angina by a physician.	Patient has no history of angina.	Code n2
		2	Yes		The patient has a history of angina.	
		99	Unknown		Information missing.	
ACS 2.03	History of congestive heart failure (CHF)	1	No	Indicate if the patient has a history of congestive heart failure and/or has previously been treated for congestive heart failure by a physician.	Patient has no previous history of congestive heart failure.	Code n2
		2	Yes		The patient has a history of congestive heart failure.	
		99	Unknown		Information missing.	
ACS 2.04	History of stroke	1	No	Indicate if the patient has a history of cerebrovascular accident (CVA) / stroke, as evidenced by a persistent neurological deficit due to ischaemia.	Patient has no previous history of stroke.	Code n2
		2	Yes		Patient has a history of stroke.	
		99	Unknown		Information missing.	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 2.05	History of peripheral vascular disease	1	No	History or evidence of aneurysm or occlusive peripheral vascular disease or carotid disease, including aortic aneurysm, previous aorto-iliac or peripheral vascular surgery, or reduced or absent peripheral pulses and / or angiographic stenosis of more than 50%.	Patient has no previous history of peripheral vascular disease	Code n2
		2	Yes		Patient has a history of peripheral vascular disease	
		99	Unknown		Information missing	
ACS 2.06	History of chronic renal failure	1	No	Indicate if the patient has a history of chronic renal failure documented by any one of the following: (a) Serum creatinine greater than 2.0 **mg/dl** or **200 umol/l** in the past (b) On dialysis (c) Has had a renal transplantation	Patient has no previous history of chronic renal failure	Code n2
		2	Yes		Patient has a history of chronic renal failure.	
		99	Unknown		Information missing	
ACS 2.07	Chronic lung disease	1	No	Indicate if the patient has a history of chronic lung disease and/or has previously been treated for chronic lung disease by a physician.	The patient does not have a history of chronic lung disease	Code n2
		2	Yes		The patient does have a history of chronic lung disease	
		99	Unknown		Information missing	
ACS 2.08	Previous percutaneous coronary intervention (PCI)	1	No	Indicate if the patient has had a previous PCI of any type before the current admission (e.g. balloon angioplasty, implantation of intra coronary stent or other catheter devices for treating coronary atheroma, atherectomy, laser angioplasty or other).	The patient has never had a previous percutaneous coronary intervention	Code n2
		2	Yes		The patient has had a previous percutaneous coronary intervention prior to this admission	
		99	Unknown		Information missing	
ACS 2.09	Coronary artery bypass graft [CABG]	1	No	Indicate if the patient had coronary artery bypass graft (CABG) done prior to this admission	The patient has never had a previous CABG	Code n2
		2	Yes		The patient has had a previous CABG prior to this admission	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Risk Factors [relevant to CAD]						
ACS 3.01	Smoking status	1	Never	Indicate if the patient has a history confirming any form of tobacco use in the past. This includes cigarettes/cigar/pipe.	Patient has never smoked a tobacco product	Code n2
		2	Current		Patient regularly smokes a tobacco product / products one or more times per day or has smoked in the 30 days prior to this admission	
		3	Former		Patient has stopped smoking tobacco products greater than 30 days before this admission	
		99	Unknown		Information missing	
ACS3.02	Diabetes mellitus	1	Non-diabetic	Indicate if the patient has a history of diabetes mellitus diagnosed prior to the current admission.	Patient does not have diabetes	Code n2
		2	Diabetic (dietary control)		The patient has received dietary advice appropriate to their condition but is not receiving medication	
		3	Diabetic (oral medication)		The patient uses oral medication to control their condition	
		4	Diabetic (insulin)		The patient uses insulin treatment, with or without oral therapy, to control their condition	
		5	Newly diagnosed diabetic		If a patient is admitted with new (not previously diagnosed) diabetes use option "newly diagnosed diabetes" as final treatment modality will not be known	
		99	Unknown		Information missing	
ACS 3.03	History of hypertension	1	No	Indicate if the patient has a history of hypertension diagnosed and/or treated by a physician.	The patient does not have a history of hypertension prior to this admission	Code n2
		2	Yes		The patient does have a history of hypertension prior to this admission	
		99	Unknown		Information missing	
ACS 3.04	History of hypercholesterolemia	1	No	Indicate if the patient has a documented history of hypercholesterolemia diagnosed and/or treated by a physician.	The patient does not have a history of hypercholesterolemia prior to this hospital admission	Code n2
		2	Yes		The patient does have a history of hypercholesterolemia prior to this admission	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Medication: pre hospital						
ACS 4.01	Aspirin	1	No	Indicate if the patient was taking aspirin regularly prior to this admission to hospital.	The patient was not taking aspirin regularly prior to this hospital admission	Code n2
		2	Yes		The patient was taking aspirin regularly prior to this hospital admission	
		99	Unknown		Information missing	
ACS 4.02	Other antiplatelet	1	No	Indicate if the patient was taking antiplatelet medication (other than aspirin) regularly prior to this admission to hospital.	The patient was not taking antiplatelet medication regularly prior to this hospital admission	Code n2
		2	Ticlopidine/Clopidogrel		The patient was taking ticlopidine/clopidogrel regularly prior to this hospital admission	
		88	Other antiplatelet agent		The patient was taking other antiplatelet medication regularly prior to this hospital admission (other than apsirin/clopidogrel/ticlopidine)	
		99	Unknown		Information missing	
ACS 4.03	Anticoagulants	1	No	Indicate if the patient was taking anticoagulant medication before this hospital admission.	The patient was not taking anticoagulants regularly prior to this hospital admission	Code n2
		2	Vitamin K antagonists		The patient was taking vitamin K antagonists [Warfarin, coumadin, other etc] regularly prior to this hospital admission	
		3	Oral thrombin inhibitors		The patient was taking other thrombin inhibitors [ximelagatran] regularly prior to this hospital admission.	
		88	Other		The patient was taking other anticoagulant medication regularly prior to this hospital admission.	
		99	Unknown		Information missing	
ACS 4.04	Beta-blockers	1	No	Indicate if the patient was taking Beta-blockers regularly prior to this admission to hospital.	The patient was not taking Beta-blockers regularly prior to this hospital admission	Code n2
		2	Yes		The patient was taking Beta-blockers regularly prior to this hospital admission	
		99	Unknown		Information missing	
ACS 4.05	ACE inhibitors	1	No	Indicate if the patient was taking ACE inhibitors regularly prior to this admission to hospital.	The patient was not taking ACE inhibitors regularly prior to this hospital admission	Code n2
		2	Yes		The patient was taking ACE inhibitors regularly prior to this hospital admission	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 4.06	Angiotensin II receptor blockers	1	No	Indicate if the patient was taking angiotensin II receptorblockers regularly prior to this admission to hospital.	The patient was not taking angiotensin II receptor blockers regularly prior to this hospital admission	Code n2
		2	Yes		The patient was taking angiotensin II receptor blockers regularly prior to this hospital admission	
		99	Unknown		Information missing	
ACS 4.07	Diabetic control	1	None	Indicate the **main method** of diabetic treatment the patient has been receiving.	The patient was not on diet, oral agent and/or insulin for his/her diabetes prior to hospital admission	Code n2
		2	Insulin and oral agent		Prior to this hospital admission the **main** method of diabetic control is a combination of insulin and oral agent	
		3	Insulin		Prior to this hospital admission the **main** method of diabetic control is insulin	
		4	Oral agent		Prior to this hospital admission the **main** method of diabetic control is oral agent	
		6	Diet alone		Prior to this hospital admission the **main** method of diabetic control is diet	
		99	Unknown		Information missing	
ACS 4.08	Statins	1	No	Indicate if the patient was taking statins regularly prior to this admission to hospital.	The patient was not taking statins regularly prior to this hospital admission	Code n2
		2	Yes		The patient was taking statins regularly prior to this hospital admission	
		99	Unknown		Information missing	
ACS 4.09	Non-statin lipid lowering agents	1	None	Indicate if the patient was taking non-statin lipid lowering agents regularly prior to this admission to hospital.	The patient was not taking non-statin lipid lowering agents regularly prior to this hospital admission	Code n2
		2	Ezetimibe		The patient was taking ezetimibe regularly prior to this hospital admission	
		3	Fibrates		The patient was taking fibrates regularly prior to this hospital admission	
		88	Other non-statin		The patient was taking other non-statin lipid lowering agents regularly prior to this hospital admission	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Working Diagnosis						
ACS 5.01	Predominant presenting symptom	1	Asymptomatic	Indicate the predominant symptom /reason why patient presented for medical attention.		Code n2
		2	Chest pain			
		3	Dyspnoea			
		4	Fatigue			
		5	Syncope			
		6	Cardiac arrest/ aborted sudden death			
		88	Other symptoms			
		99	Unknown		Information missing	
ACS 5.02	Symptom onset date and time			Indicate the date and time of onset of symptom / reason that prompted the patient's presentation for medical attention.		DateTime
ACS 5.03	Heart rate			Indicate the patient's heart rate (beats per minute) reading. This should be the first heart rate recorded by a health care provider (GP/ ambulance staff/A&E staff) **AND** when the patient is in a stable cardiac rhythm.		Code n3
ACS 5.04	Systolic blood pressure			Indicate the patient's systolic blood pressure reading (mm Hg). This should be the first blood pressure recorded by a health care provider (GP/ ambulance staff/A&E staff) **AND** when the patient is in a stable cardiac rhythm.		Code n3
ACS 5.06	Date and time of admission/arrival at hospital			Indicate the date and time the patient first presented to the hospital for this admission.		DateTime

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 5.07	Killip class	1	Class 1	Indicate the Killip class of the patient at the time of hospital admission.	Absence of rales over the lung field and absence of S3	Code n2
		2	Class 2		Rales over 50% or less of the lung field or the presence of an S3	
		3	Class 3		Rales over more than 50% of the lung field	
		4	Class 4		Shock: Defined by the clinical criteria of hypotension (SBP<90mmHg for at least 30 minutes or need for support measures to maintain SBP>90mmHg) and end organ hypoperfusion (cool extremities or urine output < 30 ml/hour and heart rate > 60 beats/minute).	
		99	Unknown		Information missing	
ACS 5.08	ECG rhythm	1	Sinus rhythm	Indicate the rhythm on the first admission ECG.		Code n2
		2	Atrial fibrillation			
		3	Pacemaker			
		88	Other			
		99	Unknown		Information missing	
ACS 5.09	ECG QRS annotation	1	Normal	Indicate if first admission ECG has any QRS abnormalities.	No QRS abnormalities	Code n2
		2	LBBB		Left bundle branch block	
		3	RBBB		Right bundle branch block	
		88	Other			
		99	Unknown		Information missing	
ACS 5.10	ECG STT changes	1	Normal	Indicate if the first admission ECG has any STT changes. Note: if more than one of these options are applicable to a patient then the most severe should be coded. For example if the patient has 2,3,and 4 then 2 should be coded. Options 2, 3, 4 and 88 are ranked in order.	No STT changes	Code n2
		2	ST elevation		ST-segment elevation indicates greater than or equal to 1mm (0.1mV) elevation in 2 or more contiguous leads	
		3	ST depression		ST-segment depression of at least 0.5mm (0.05 mV) in 2 or more contiguous leads (includes reciprocal changes)	
		4	Pathological T-inversion (absence of ST deviation)		Pathological T- wave inversion of at least 1mm (0.1 mV) including inverted T waves that are not indicative of acute MI [In the absence of ST deviation]	
		88	Other			
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 5.11	Elevated biochemical marker	1	No	Indicate if biochemical markers were raised above the levels recognised in guidelines for diagnosis of acute myocardial infarction (NB these levels may vary between laboratories).	Biochemical markers were not raised above the levels recognised in guidelines for diagnosis of acute myocardial infarction	Code n2
		2	Yes		Biochemical markers were raised above the levels recognised in guidelines for diagnosis of acute myocardial infarction	
		99	Unknown		Information missing	
ACS 5.12	Biochemical marker type	1	Troponin T and/or I	Indicate which biochemical marker was tested to indicate the presence/absence of an acute MI Note: these options are ranked in order so if all three biochemical markers were tested code option one, if option 2 and 3 were raised code option 2 etc.		Code n2
		2	CK- MB			
		3	CK			
		99	Unknown		Information missing	
ACS 5.13	Cholesterol [total]			Indicate the first total serum cholesterol level in **mmol/l** [ideally taken within 24 hours of this admission].		n2.2
ACS 5.14	Serum creatinine			Indicate the level of the serum creatinine (first) during this admission in **mg/dl** or **umol/l.**		n3.2

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 5.15 MP	Working diagnosis (this will determine the patients treatment)	1	STEMI/LBBB MI	After initial assessment of the patient, indicate the diagnosis on which further management of the patient is based.	**STEMI:** There will normally be a history consistent with the diagnosis. The diagnosis requires the presence of cardiographic changes of ST elevation consistent with infarction of =>2mm in contiguous chest leads and/or ST elevation of =>1 mm in 2 or more standard leads. (New LBBB is included; although ST elevation is usually apparent in the presence of LBBB) **[MINAP]**	Code n2
		2	NSTEMI		**NSTEMI:** After early reperfusion treatment there may be rapid resolution of existing ST elevation associated with a CK rise less than twice the upper limit of normal or a small troponin release. If only troponin has been measured and is elevated; it is a local decision whether this is recorded as definite infarction or threatened infarction. In practice analysis of the use of thrombolytic treatment will be based on the admission diagnosis rather than the final diagnosis. **[MINAP]**	
		3	Unstable Angina		**Unstable angina** is defined as angina pectoris (or equivalent type of ischaemic 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..There must be no biochemical evidence of myocardial necrosis. **[ACC]**	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Investigations and Treatment						
ACS 6.01	Thrombolysis therapy administered	1	None	Indicate the type of thrombolysis therapy administered. NB if in field ACS 6.04 option 'facilitated' is ticked the type of thrombolysis used should also be indicated in this field (6.01).	Thrombolysis was not administered	Code n2
		2	Streptokinase		Streptokinase was the thrombolytic agent administered	
		3	tPA agents		tPA agent (rt-PA, t-PA, TNK etc) was the thrombolytic administered	
		88	Other		Other thrombolytic agent was administered	
		99	Unknown		Information missing	
ACS 6.02	Date and time of thrombolysis			Indicate the date and time **thrombolysis** was commenced. This is defined as the time the infusion was commenced and/or time of bolus injection.		DateTime

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 6.03	Reason why thrombolysis not administered	1	Primary PCI	Indicate the reason why thrombolysis was not administered.	Emergency PCI for acute STEMI, no thrombolysis given. Includes patients presenting with a clear history of AMI and LBBB	Code n2
		2	No ECG criteria		ECG does not show unequivocal ST elevation or LBBB.	
		3	Too late		Too late [according to local/national/European guidelines]	
		4	Other known contraindications (see list)		**Absolute contraindications** -Haemorrhagic stroke or stroke of unknown origin at any time -Ischaemic stroke in preceding 6 months -Central nervous system damage or neoplasms -Recent major trauma/surgery/head injury (within preceding 3 weeks) -Gastro-intestinal bleeding within the last month -Known bleeding disorder -Aortic dissection **Relative contraindications** -Transient ischaemic attack in preceding 6 months -Oral anticoagulant therapy -Pregnancy or within 1 week postpartum -Non-compressible punctures -Traumatic resuscitation -Refractory hypertension (systolic blood pressure >180 mm Hg) -Advanced liver disease -Infective endocarditis -Active peptic ulcer **ESC Guidelines- Management of AMI in patients presenting with ST-segment elevation 2003**	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 6.04	Reperfusion by PCI	1	No	If the patient underwent a percutaneous coronary intervention indicate the type.	No PCI was performed	Code n2
		2	Primary		Emergency PCI for acute STEMI, no thrombolysis given. Includes patients presenting with a clear history of AMI and LBBB	
		3	Facilitated		PCI performed in the acute setting as soon as possible after thrombolysis for acute STEMI (or new LBBB) with a clear history of AMI, provided as a routine treatment in addition to thrombolysis NB also complete ACS 6.01	
		4	Rescue		PCI performed on a coronary artery which remains occluded despite thrombolytic therapy	
		99	Unknown		Information missing	
ACS 6.05	Date and time of percutaneous coronary intervention (PCI)			Indicate the date and time of percutaneous coronary intervention [PCI].		Date time
ACS 6.06	Type of stress test	1	None	If the patient underwent a stress test during hospital stay indicate the type of stress test.		Code n2
		2	Exercise ECG			
		3	Stress echocardiogram			
		4	Scintigraphy			
		88	Other			
		99	Unknown		Information missing	
ACS 6.07	Stress test result	1	No ischaemia	Indicate if signs of ischaemia were present on the stress test used (as determined by the clinician).		Code n2
		2	Signs of ischaemia			
		3	Indeterminate			
		99	Unknown		Information missing	
ACS 6.08	Left ventricular (LV) function	1	Normal (>50%)	Indicate the patients estimated or calculated left ventricular [LV] function This categorises the percentage of the blood emptied from the left ventricle at the end of the contraction. Data may have been derived from angiography, echocardiography, nuclear imaging, magnetic resonance imaging etc.		Code n2
		2	Slightly reduced (41-50%)			
		3	Moderately reduced (31-40%)			
		4	Severely reduced (<30%)			
		5	LV function not assessed			
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 6.09	Coronary angiogram	1	No	Indicate if the patient underwent diagnostic coronary angiography during this admission episode.	Patient did not have a coronary angiogram during this admission episode	Code n2
		2	Yes		The patient did have a coronary angiogram during this admission episode	
		3	Transferred/Planned		The patient was transferred to another hospital for an arranged coronary angiogram.	
		99	Unknown		Information missing	
ACS 6.10 MP	Number of vessels diseased	1	0 vessel	Indicate from the coronary angiogram performed the number of vessels with significant reduction in luminal diameter due to coronary atheroma (I.e. with stenosis greater than 50%) Significant disease is indicated if the luminal diameter of the coronary artery is reduced by > 50% due to coronary arteromatous disease.	No significant disease in any of the coronary arteries	Code n2
		2	1 vessel		Significant disease is present in one vessel only (LAD, LCx, RCA)	
		3	2 vessel		significant disease is present in two vessels only (LAD, LCx, RCA)	
		4	3 vessel		significant disease is present in three vessels (LAD, LCx, RCA)	
		5	Left Main Stem (LMD) only		Significant disease is present in left main stem and there is NO significant disease in the RCA. NB patients with LMS disease in this group may also have disease in the LAD and LCx	
		6	Left Main Stem (LMD) and Right Coronary Artery		Significant disease is present in left main stem + significant disease in RCA	
		99	Unknown		Information missing	
ACS 6.11	Percutaneous coronary intervention (PCI)	1	No	Indicate if the patient underwent a PCI during this admission episode. This is for patients who had PCI during this admission that was **not** for primary reperfusion. Patients who had PCI for primary reperfusion and who had no subsequent PCI during this admission are coded as 'no'.	Patient did not have a PCI during this admission episode	Code n2
		2	Yes		The patient did have a PCI during this admission episode	
		3	Transferred/Planned		The patient was transferred to another hospital for an arranged PCI.	
		99	Unknown		Information missing	
ACS 6.12	Date and time of percutaneous coronary intervention (PCI)			Indicate the date the PCI was performed if performed during this admission episode.		DateTime

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 6.13	Coronary artery bypass graft (CABG)	1	No	Indicate if the patient underwent CABG during this admission episode.	Patient did not have a CABG during this admission episode	Code n2
		2	Yes		The patient did have a CABG during this admission episode	
		3	Transferred/Planned		The patient was transferred to another hospital for an arranged CABG.	
		99	Unknown		Information missing	
ACS 6.14	Coronary artery bypass graft (CABG) date			Indicate the date the CABG was performed if performed during this admission episode.		Date
ACS 6.15	Electrical devices	1	None	Indicate if the patient had any of the following electrical devices implanted during this admission episode.	The patient had no electrical devices implanted during this admission	Code n2
		2	Pacemaker (permanent)		The patient had a permanent pacemaker inserted during this hospital stay	
		3	ICD		The patient had an implantable cardioverter defibrillator inserted during this hospital stay	
		4	ICD and Pacemaker		The patient had a pacemaker and an implantable cardioverter defibrillator inserted during this hospital stay	
		99	Unknown		Information missing	
Medication during hospital stay.						
ACS 7.01	Aspirin	1	No	Indicate if aspirin was administered in the treatment of ACS.	Aspirin was not administered during the treatment of ACS	Code n2
		2	Yes		Aspirin was administered during the treatment of ACS	
		99	Unknown		Information missing	
ACS 7.02	Heparin/low molecular weight heparin	1	No	Indicate if heparin/low molecular weight heparin [LMWH] was administered in the treatment of ACS .	Heparin was not administered in the treatment of ACS	Code n2
		2	Unfractionated heparin		Unfractionated heparin was administered in the treatment of ACS	
		3	LMWH		LMWH heparin was administered in the treatment of ACS	
		4	LMWH + Unfractionated heparin		Both unfractionated heparin and LMWH were administered in the treatment of ACS	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 7.03	IV Glycoprotein (GP) IIb/IIIa	1	No	Indicate the use of IV Glycoprotein IIb/IIIa inhibitors and type in the treatment of ACS.	IV glycoprotein inhibitor was not administered in the treatment of ACS	Code n2
		2	Abciximab		Abciximab was administered in the treatment of ACS	
		3	Tirofiban		Tirofiban was administered in the treatment of ACS	
		4	Eptifibatide		Eptifibatide was administered in the treatment of ACS	
		99	Unknown		Information missing	
ACS 7.04	ACE inhibitors	1	No	Indicate if ACE inhibitors were administered in the treatment of ACS.	ACE inhibitors were not administered in the treatment of ACS	Code n2
		2	Yes		ACE inhibitors were administered in the treatment of ACS	
		99	Unknown		Information missing	
ACS 7.05	Beta- blockers	1	No	Indicate if Beta-blockers were administered in the treatment of ACS.	Beta-blockers were not administered in the treatment of ACS	Code n2
		2	Intravenous		IV Beta-blockers were administered in the treatment of ACS	
		3	Oral		Oral Beta-blockers were administered in the treatment of ACS	
		4	Intravenous and oral		IV and oral Beta-blockers were administered in the treatment of ACS	
		99	Unknown		Information missing	
ACS 7.06	Diuretics	1	No	Indicate if diuretics were administered in the treatment of ACS.	Diuretics were not administered in the treatment of ACS	Code n2
		2	Yes		Diuretics were administered in the treatment of ACS	
		99	Unknown		Information missing	
ACS 7.07	Inotropes	1	No	Indicate if inotropes were administered in the treatment of ACS.	Inotropes were not administered in the treatment of ACS	Code n2
		2	Yes		Inotropes were administered in the treatment of ACS	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Outcome						
ACS 8.01	Myocardial reinfarction during hospital stay	1	No	Indicate if the patient had a myocardial reinfarction during this hospital stay. To meet the criteria as a post admission event, an MI must be distinct from the index event at the time of admission. See ESC/ACC definition of MI (appendix 1)		Code n2
		2	Yes			
		99	Unknown		Information missing	
ACS 8.02	Bleeding during hospital stay	1	No	Indicate if there was an episode of bleeding during the hospital stay that required close monitoring and/ or specific treatment, e.g. transfusion (blood or blood products). Not associated with arterial access site	The patient did not experience a major bleed during this hospital admission	Code n2
		2	Intracranial bleed		The patient had an intracranial bleed documented by one of the following: - bleeding into or around the brain - haemorrhagic conversion of a primary ischaemic stroke - subarachnoid haemorrhage - Intracerebral haemorrhage - Other (Including subdural and epidural haematomas)	
		3	Retroperitoneal bleed (major)		The patient had a major retroperitoneal bleed. **Major:** Overt clinical bleeding associated with a drop in haemoglobin of greater than 5 g/dl (0.5 g/l) or in haematocrit of greater than 15% (absolute)	
		4	Any other spontaneous bleed (major)		The patient had a major spontaneous bleed at other site. **Major**: Overt clinical bleeding associated with a drop in haemoglobin of greater than 5 g/dl (0.5 g/l) or in haematocrit of greater than 15% (absolute)	
		99	Unknown		Information missing	
ACS 8.03	Stroke during hospital stay	1	No	Indicate if the patient was diagnosed as having a stroke during hospital stay, as evidenced by persistent loss of neurological function caused by an ischaemic event.		Code n2
		2	Yes			
		99	Unknown		Information missing	
ACS 8.04	Resuscitated cardiac arrest	1	No	Indicate if the patient had a cardiac arrest during hospital admission and was successfully resuscitated.		Code n2
		2	Yes			
		99	Unknown		Information missing	
ACS 8.05	Date and time of cardiac arrest			Indicate the date and time of cardiac arrest		Date time

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 8.06 LP	Mechanical complications	1	None	indicate if the patient developed any of the following mechanical complications during this admission. If more than one occurred indicate the most life threatening complications - i.e. 2>3>4.	No mechanical complication occurred	Code n2
		2	Free wall rupture		Free wall rupture occurring at infarct site at free wall of left ventricle.	
		3	Ventricular septal defect		Ventricular Septal Defect: Rupture of the ventricular septum, as documented by cardiac echocardiography, ventriculography, pericardiocentesis, cardiac surgery, and/or autopsy.	
		4	Mitral regurgitation		Mitral Regurgitation: Acute severe MR. May be due to papillary muscle rupture or involvement of papillary muscle in the infarct	
		5	Tamponade			
		99	Unknown		Information missing	
ACS 8.07 LP	Discharge ECG rhythm	1	Sinus rhythm	Indicate the patients discharge ECG rhythm.		Code n2
		2	Atrial fibrillation			
		3	Pacemaker			
		88	Other			
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 8.10	Discharge diagnosis	1	STEMI/LBBB MI	Indicate the discharge diagnosis.	**STEMI:** There will normally be a history consistent with the diagnosis. The diagnosis requires the presence of cardiographic changes of ST elevation consistent with infarction of =>2mm in contiguous chest leads and/or ST elevation of =>1 mm in 2 or more standard leads. (New LBBB is included; although ST elevation is usually apparent in the presence of LBBB) **[MINAP]**	Code n2
		2	NSTEMI		**NSTEMI:** After early reperfusion treatment there may be rapid resolution of existing ST elevation associated with a CK rise less than twice the upper limit of normal or a small troponin release. If only troponin has been measured and is elevated; it is a local decision whether this is recorded as definite infarction or threatened infarction. In practice analysis of the use of thrombolytic treatment will be based on the admission diagnosis rather than the final diagnosis. **[MINAP]**	
		3	Unstable Angina		NB not a diagnosis of exclusion **Unstable angina** is defined as angina pectoris (or equivalent type of ischaemic 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. There must be no biochemical evidence of myocardial necrosis. **[ACC]**	
		4	Stable angina			
		88	Other		Symptoms suggestive of coronary artery disease (CAD) on admission but discharge diagnosis is not related to presence of CAD.	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 8.11	Survival status at discharge	1	Alive	Indicate vital status at discharge.		Code n2
		2	Dead			
		99	Unknown		Information missing	
ACS 8.12	Date of discharge/death			Indicate the date the patient was discharged from hospital or if patient died record the date of death.		Date
Medication at discharge : Indicate if the patient was prescribed the following medications at discharge. This includes if the hospital consultant prescribed aspirin or if plans are in place to follow up prescription with GP.						
ACS 9.01	Aspirin	1	No	Indicate if the patient was prescribed aspirin on discharge from hospital.	The patient was not prescribed aspirin on discharge from hospital	Code n2
		2	Yes		The patient was prescribed aspirin on discharge from hospital	
		99	Unknown		Information missing	
ACS 9.02	Antiplatelet	1	No	Indicate if the patient was prescribed antiplatelet medication (other than aspirin) on discharge from hospital.	The patient was not prescribed antiplatelet medication on discharge from hospital	Code n2
		2	Ticlopidine/Clopidogrel		The patient was prescribed clopidogrel/ticlopidine on discharge from hospital	
		88	Other antiplatelet agent		The patient was prescribed other antiplatelet agents on discharge (other than apsirin/clopidogrel/ticlopidine)	
		99	Unknown		Information missing	
ACS 9.03	Anticoagulants	1	No	Indicate if the patient was prescribed anticoagulant medication on discharge from hospital.	The patient was not prescribed anticoagulant medication on discharge from hospital	Code n2
		2	Vit. K antagonists		The patient was prescribed vitamin K antagonists [warfarin, coumadin, etc] on discharge from hospital	
		3	Oral thrombin inhibitors		The patient was prescribed thrombin inhibitors [ximelagatran] on discharge from hospital	
		88	Other		The patient was prescribed other anticoagulants on discharge from hospital	
		99	Unknown		Information missing	
ACS 9.04	Beta-blockers	1	No	Indicate if the patient was prescribed Beta-Blockers on discharge from hospital.	The patient was not prescribed Beta-blockers on discharge from hospital	Code n2
		2	Yes		The patient was prescribed Beta-blockers on discharge from hospital	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 9.05	ACE inhibitors	1	No	Indicate if the patient was prescribed ACE inhibitors on discharge from hospital.	The patient was not prescribed ACE inhibitors on discharge from hospital	Code n2
		2	Yes		The patient was prescribed ACE inhibitors on discharge from hospital	
		99	Unknown		Information missing	
ACS 9.06	Angiotensin II receptor blockers	1	No	Indicate if the patient was prescribed angiotensin II receptor blockers on discharge from hospital.	The patient was not prescribed angiotensin II receptor blockers on discharge from hospital	Code n2
		2	Yes		The patient was prescribed angiotensin II receptor blockers on discharge from hospital	
		99	Unknown		Information missing	
ACS 9.07	Diabetic control	1	None	Indicate the **main method** of diabetic treatment the patient was prescribed on discharge from hospital.	On discharge the patient was not currently on diet, oral agent and/or insulin for his/her diabetes	Code n2
		2	Insulin and oral agent		On discharge the **main** method of diabetic control was a combination of insulin and oral agent	
		3	Insulin		On discharge the **main** method of diabetic control was insulin	
		4	Oral agent		On discharge the **main** method of diabetic control was oral agent	
		6	Diet only		On discharge the **main** method of diabetic control was diet alone	
		99	Unknown		Information missing	
ACS 9.08	Statins	1	No	Indicate if the patient was prescribed statins on discharge.	The patient was not prescribed statins on discharge from hospital	Code n2
		2	Yes		The patient was prescribed statins on discharge from hospital	
		99	Unknown		Information missing	
ACS 9.09	Non-statin lipid lowering agents	1	None	Indicate if the patient was prescribed non-statin lipid lowering agents on discharge.	The patient was not prescribed any non-statin lipid lowering agent on discharge from hospital	Code n2
		2	Ezetimibe		The patient was prescribed ezetimibe on discharge from hospital	
		3	Fibrates		The patient was prescribed fibrates on discharge from hospital	
		88	Other non-statin		The patient was prescribed other non-statin lipid lowering agent on discharge from hospital	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
Follow Up - Date and status at 12th month after the index event obtained by any reliable source (outpatient visit, medical record, telephone call, administrative database.						
ACS 10.01	Date of follow up			Indicate the date of last follow up alive. This may be the date of follow up or the date the patient is last seen alive by verifiable sources.		Date
ACS 10.02	Survival status at follow up	1	Alive	Indicate vital status at follow up.		Code n2
		2	Dead			
		99	Unknown		Information missing	
ACS 10.03	Date of death			If the patient died indicate the date of death.		Date
ACS 10.04	Primary cause of death	1	Cardiovascular	Indicate the primary cause of death.	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, consider further specification such as - MI - Ischaemic stroke - Primary arrhythmic death (without MI) - Progressive heart failure - Haemorrhage- related death - Unexplained sudden death	Code n2
		2	Non - Cardiovascular		Others causes -e.g. malignancy	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 10.05	Anginal status	1	None	Indicate the patients anginal status at the time of follow-up using the Canadian Cardiovascular Society (CCS) grading system NB: there are eight blocks to a mile.	No angina	Code n2
		2	CCS I		Ordinary physical activity, such as walking and climbing stairs, does not cause angina. Angina occurs with strenuous, or rapid, or prolonged exertion at work or recreation.	
		3	CCS II		Slightly limitation of ordinary activity. Angina occurs on walking or climbing stairs rapidly, walking uphill, walking or climbing stairs after meals, in cold, in wind, or when under emotional stress, or during the few hours after awakening. Angina occurs on walking more than 2 blocks (400 metres) and on level terrain and climbing more than one flight of ordinary stairs at a normal pace and under normal conditions.	
		4	CCS III		Marked limitation of ordinary physical activity. Angina occurs on walking one to two blocks (200- 400 metres) on level terrain and /or climbing more than one flight under normal conditions and at normal pace	
		5	CCS IV		Inability to carry on any physical activity without discomfort. Anginal syndrome may be present at rest.	
		99	Unknown		Information missing	
ACS 10.06	Dyspnoea	1	NYHA I	Grade breathing status using the New York Heart Association (NYHA) functional classification.	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, or dyspnoea.	Code n2
		2	NYHA II		Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, or dyspnoea	
		3	NYHA III		Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, or dyspnoea	
		4	NYHA IV		Unable to carry on any physical activity without symptoms. Symptoms are present even at rest. If any physical activity is undertaken, symptoms are increased.	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 10.07	Date of first hospital readmission since discharge			If the patient was readmitted to hospital indicate the date.		Date
ACS 10.08	Myocardial infarction [MI]	1	No	Indicate if the patient was diagnosed as having an myocardial infarction since the date of discharge. See Appendix 1 for ESC/ACC definition of MI.	The patient was not diagnosed as having a MI since the date of discharge	Code n2
		2	Yes		The patient was diagnosed as having a MI since the date of discharge	
		99	Unknown		Information missing	
ACS 10.09	Myocardial infarction [MI] date			Indicate the date of the myocardial infarction.		Date
ACS 10.10	Stroke	1	No	Indicate if the patient was diagnosed as having a stroke since discharge from hospital, as evidenced by persistent loss of neurological function caused by an ischaemic event.	The patient was not diagnosed as having a stroke since the date of discharge	Code n2
		2	Yes		The patient was diagnosed as having a stroke since the date of discharge	
		99	Unknown		Information missing	
ACS 10.11	Stroke date			Indicate the date of the stroke.		Date
ACS 10.12	Percutaneous coronary intervention [PCI]	1	No	Indicate if the patient had a percutaneous coronary intervention since the date of discharge.	The patient did not undergo a PCI since date of discharge	Code n2
		2	Yes		The patient did undergo a PCI since date of discharge	
		99	Unknown		Information missing	
ACS 10.13	Percutaneous coronary intervention [PCI] date			Indicate the date of percutaneous coronary intervention [PCI].		Date
ACS 10.14	Coronary artery bypass graft [CABG]	1	No	Indicate if the patient had coronary artery bypass graft [CABG] since the date of discharge.	The patient did not undergo CABG since date of discharge	Code n2
		2	Yes		The patient did undergo CABG since date of discharge	
		99	Unknown		Information missing	
ACS 10.15	Coronary artery bypass graft [CABG] date			Indicate the date of coronary artery bypass graft [CABG].		Date

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 10.16	Cardiac rehabilitation program	1	No	Indicate if the patient attended or is attending a cardiac rehabilitation programme since discharge.	The patient did not or is not presently attending a cardiac rehabilitation programme [since date of discharge]	Code n2
		2	Yes		The patient did or is presently attending a cardiac rehabilitation programme [since date of discharge]	
		99	Unknown		Information missing	
Medication at follow up.						
ACS 11.01	Aspirin	1	No	On follow up indicate if the patient is taking aspirin regularly.	The patient is not taking aspirin regularly	Code n2
		2	Yes		The patient is taking aspirin regularly	
		99	Unknown		Information missing	
ACS 11.02	Antiplatelet	1	No	On follow-up indicate if the patient is taking antiplatelet medication (other than aspirin) regularly.	The patient is not taking antiplatelet medication regularly	Code n2
		2	Ticlopidine/Clopidogrel		The patient is taking ticlopidine/clopidogrel regularly	
		88	Other antiplatelet medication		The patient is taking other antiplatelet medication regularly (other than apsirin/clopidogrel/ticlopidine)	
		99	Unknown		Information missing	
ACS 11.03	Anticoagulants	1	No	On follow-up indicate if the patient is taking anticoagulant medication regularly.	The patient is not taking anticoagulants regularly	Code n2
		2	Vit. K antagonists		The patient is taking vitamin K antagonists [warfarin, coumadin, etc] regularly	
		3	Oral thrombin inhibitors		The patient is taking other thrombin inhibitors [ximelagatran] regularly	
		88	Other		The patient is taking other anticoagulant medication regularly.	
		99	Unknown		Information missing	
ACS 11.04	Beta-blockers	1	No	On follow-up indicate if the patient is -taking Beta-Blockers regularly.	The patient is not taking Beta-blockers regularly.	Code n2
		2	Yes		The patient is taking Beta-blockers regularly.	
		99	Unknown		Information missing	

ID	Field name/prompt	Short Code	Field content	Definition	Definition of field options	Data Format
ACS 11.05	ACE inhibitors	1	No	On follow-up indicate if the patient is taking ACE inhibitors regularly.	The patient is not taking ACE inhibitors regularly.	Code n2
		2	Yes		The patient is taking ACE inhibitors regularly.	
		99	Unknown		Information missing	
ACS 11.06	Angiotensin II receptor blockers	1	No	On follow-up indicate if the patient is taking angiotensin II receptor blockers regularly.	The patient is not taking angiotensin II receptor blockers regularly.	Code n2
		2	Yes		The patient is taking angiotensin II receptor blockers regularly.	
		99	Unknown		Information missing	
ACS 11.07	Diabetic control	1	None	On follow-up indicate the **main method** of diabetic control the patient is regularly receiving.	The patient is not on diet, oral agent and/or insulin for his/her diabetes	Code n2
		2	Insulin and oral agent		The **main** method of diabetic control is a combination of insulin and oral agent	
		3	Insulin		The **main** method of diabetic control is insulin	
		4	Oral agent		The **main** method of diabetic control is an oral agent	
		6	Diet only		The **main** method of diabetic control is diet only	
		99	Unknown		Information missing	
ACS 11.08	Statins	1	No	On follow-up indicate if the patient is taking statins regularly.	The patient is not taking statins regularly.	Code n2
		2	Yes		The patient is taking statins regularly.	
		99	Unknown		Information missing	
ACS 11.09	Non-statin lipid lowering agents	1	None	On follow-up indicate if the patient is taking non-statin lipid lowering agents regularly.	The patient is not taking any non-statin lipid lowering agent	Code n2
		2	Ezetimibe		The patient is taking ezetimibe regularly.	
		3	Fibrates		The patient is taking fibrates regularly.	
		88	Other non-statin		The patient is taking other non-statin lipid lowering agent regularly.	
		99	Unknown		Information missing	

CCU/ACS Draft Data Standards with appendices

Appendix 1
European Society of Cardiology /American College of Cardiology Definition of Myocardial Infarction

Appendix 2
Classification of data format

Appendix 1

European Society of Cardiology /American College of Cardiology Definition of Myocardial Infarction

Reference: Myocardial infarction redefined- a consensus document of the Joint European Society of Cardiology/American College of Cardiology Committee for the redefinition of myocardial infarction. Euro Heart Journal. 2000;21:1502-1513 (altered)

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

1. Typical rise of biochemical markers of myocardial necrosis (troponin or CK-MB) with at least 1 of the following:

    a. Ischaemic symptoms
    b. Development of pathological Q waves on the ECG
    c. ECG changes indicative of ischaemia (ST-segment elevation or depression); for further description see below -ECG changes indicative of myocardial ischemia that may progress to MI
    d. Coronary artery intervention (e.g.., coronary angioplasty)

Or

2. Pathological findings of an acute MI

ECG changes indicative of myocardial ischaemia that may progress to MI

1. Patients with ST segment elevation:
New or presumed new ST segment elevation at the J point in two or more contiguous leads with the cut-off points ≥ 0·2 mV in leads V1, V2, or V3 and ≥ 0·1mV in other leads (contiguity in the frontal plane is defined by the lead sequence aVL, I, inverted aVR, II, aVF, III).

2. Patients without ST segment elevation:
    a. ST segment depression
    b. T wave abnormalities only

Criteria for established MI

Any one of the following criteria satisfies the diagnosis for established MI:

1. Development of new pathologic Q wave on serial ECGs. The patient may or may not remember previous symptoms. Biochemical marker of myocardial necrosis may have normalized, depending on the length of time that has passed since the infarct developed.

2. Pathologic finding of a healed or healing MI.

Appendix 2 – classification of data format

Format

This column identifies to the supplier the type of storage and the type of processing required for the field.

n1 or n2, etc,	The 'n' indicates the field is numeric. The '1' indicates the maximum length of the value. If 'n1' or 'n2' appears on its own, it will be a numeric value, for example a count. See also 'Code'.
n3.1	The 'n' indicates the field is numeric. The '3.1' indicates the value may have up to three integer place and one decimal place.
An7 or an100, etc	The 'an' indicates the field is alpha numeric. That is, unless otherwise specified, the value may contain any letter, digit or punctuation character. The '7' or '100' indicates the maximum length of the value. If 'an100' appears on its own, the field is free text.

Format continued

Code

The field is a classification field whose permitted values are either defined as part of the dataset

The short form is the value listed in the 'Short code' column.
The long form is: Short-code full-stop space Text-for-long-code.

For example, the Short code and Text for long code columns for Gender contain:

1 Male
2 Female

Any of the following will be accepted

"1"
"2"
"2. Female"
"1. Male"

The size component of Gender is given as ‘n1’, which is the minimum to store the value. Implementers who decide to store the long form within their database would need to make their own determination of the storage requirements.

	Volatile	The majority of codes defined within this dataset will remain unchanged for the life of the dataset. However a small number of code lists identify devices and drugs and new values may be added
	Id	The field is an identifier or a code whose permitted values are not defined as part of the dataset or by CCAD. Examples include: NHS Number and GMC number.
	Date	The field is a date. [Date (dd/mm/yyyy)]
	DateTime	The field is a date and a time [DateTime (dd/mm/yyyy hh:mm)]
Format continued	Multivalue	This modifier can only occur in conjunction with 'Code' or 'Id'. The addition of ‘Multivalue’ to the format means that the code value may repeat.

For example: for a field listing previous procedures the codes

might be:

0 None
1 Procedure A
2 Procedure B
3 Procedure C
9 Unknown

A patient might have been the subject of none of these procedures, the surgeon might not know the patient's surgical history or the patient might have been the subject of any one, two or all three of the procedures.

For this example field, the maximum number of values is 3 (procedures A, B and C) so implementers would have to determine a method of storing up to three code values in their database. Warning, some multivalue fields are volatile so the maximum number of

For the transfer file, a semi-colon delimiters to hold the separate code values within a single field. For example, if a patient was the subject to procedures A and B, the following would be correct values for the field:

"1;2"
"1. Procedure A;2. Procedure B"

BCIS v5.12 part of the Central Cardiac Audit Database [United Kingdom]

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