Cardiology Audit Registration Data Standards [CARDS] for Percutaneous Coronary Intervention [PCI].

The CARDS Expert Committee for PCI

Draft Percutaneous Coronary Intervention [PCI] Data Standards

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Appendices

1.1 Description of PCI data standards

These are data standards for recording data on percutaneous coronary intervention [PCI] procedures.

1.2 Description of the PCI Data Standards 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 [ACS/CCU, 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 Gender has the options (1) Male, (2) Female and (9) Unknown, the numerical codes are (1), (2) and (9) and the short string includes 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 PCI 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 Percutaneous Coronary Intervention 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 on Percutaneous Coronary Intervention

- The European Coronary Intervention Register
- Austria's National PTCA database
- The Spanish Registry of Cardiac Catheter Interventions **(SRCCI)**
- The Swedish Coronary Angiography Angioplasty Registry **(SCARR)**
- The American College of Cardiology Cath lab module v2.0b
- The British Cardiac Interventional Society's Coronary Angioplasty Register **(BCIS)**
- The Mater Hospital Dublin PCI Register
- Shakespeare Registry

- Arbeitsgemeinschaft Leitender Kardiologischer Krankenhausarzte (German PCI Registry) **(ALKK)**
- The Euro Heart Survey on Revascularisation for Ischemic Heart Disease 2001
- The Swiss Percutaneous Coronary Intervention Register

Guidelines and Reference Guides

- The National Institute for Clinical Excellence **[NICE]** Guidelines on Coronary Artery Stents in the treatment of Ischaemic Heart Disease 2000
- American College of Cardiology **[ACC]** and the American Heart Association **[AHA]** guideline for Percutaneous Coronary Intervention 2001

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 will be of prime importance in relation to the above objectives

NB - the variables in this group would be 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 during the PCI or in hospital prior to discharge. Again they would help complete the information in relation to the event leading to admission. However, they may in the future be available from other cardiac disease information surveillance modalities, e.g. cardiac rehabilitation, general practitioner (GP) surveys. Also these variables would be considered of least importance in meeting 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 Description of the PCI Data Standards structure - sections

The matrix is subdivided into the following sections:

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

- **History [relevant to Coronary Artery Disease, CAD]**: includes data on the patients previous medical history such as previous myocardial infarction, and also includes data fields for previous tests, 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.

- **Investigations for Coronary Artery Disease**: this include data on investigation that the patient underwent before PCI examples include stress test, angiogram, echocardiogram, and holter monitor.

- **Percutaneous Coronary Intervention**: This subsection focuses on revascularisation by PCI.

- **Medication during PCI:** this subsection collects data on the medication that was administered during this hospital stay, both in relation to coronary artery disease status and PCI.

- **Outcome**: this captures data on the immediate outcome after the PCI. For example did the patient experience a stroke, a major bleed, or did the patient have any serious complications as a result of the PCI.

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

- **Follow up**: it is proposed to collect information at 30 days and 12 months after the index event. 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 and medication at follow up

1.4 Description of registers and databases

The following is a description of **some** national and international databases, registers and surveys used as data sources to develop the PCI data standards. A brief description is given for each of these under the headings; - devised by, type, details on data set and coverage.

The European Percutaneous Coronary Intervention Register

Devised by: The Working Group on Coronary Circulation of the European Society of Cardiology [ESC].

Type: This is an annual paper based survey that is supported by the national societies of cardiology in each of the participating countries. Co-ordinators in European countries collect data retrospectively.

Details on the data set: Collects numerical data and comments on coronary angiography, angioplasty, and stenting, other new devices, non- coronary cardiac interventions and catheterisation facilities performed in the respective year.
There are 48 data variables in total:

1. Data on institution and country (8 variables)
2. PCI data (30 variables)
3. Other data including VSD, ASD, and PFA closure by catheter (8 variables)

Coverage: 25 countries that are members of the European Society of Cardiology

Austria's National Percutaneous Transluminal Coronary Angioplasty (PTCA) database (1992- 2003)

Devised by: The Working Group of the Austrian Society of Cardiology on Interventional Cardiology.

Type: This is a computer-based system and a wide area network links all centres. It collects data for audit, quality control and quality management

Details on data set: 40-48 variables are similar to those of the European PCI Register. Additional data on PTCA is collected.

Coverage: National in scope, It covers 34 adult catheter laboratories centres and 4 paedeatric centres.

Spanish Registry of Cardiac Catheter Interventions (SRCCI)

Devised by: the Spanish Society of Cardiology.

Type: It is a paper-based questionnaire.

Details on data set: Variables are the same as the European PCI Register and additional data on non-cardiovascular interventions such as mitral valvuloplasty cases, aortic valvuloplasty and pulmonary valvuloplasty are collected. It collects data on the following; geographic, diagnostic procedures, interventional procedures, interventional procedures in acute myocardial infarction, Other devices and coronary procedures and non-coronary cardiovascular interventions.

Coverage: It collects data from 101 catheter laboratories in Spain.

Swedish Coronary Angiography and Angioplasty Registry (SCAAR)

Devised by: At the end of 1998 the National Registry for Coronary Angiography and the Swedish Registry for Coronary Angioplasty (SCAP) was merged into a single registry, SCAAR. Stockholm County Council is responsible for the registry. The purpose of this registry is to provide a description of patients who have undergone coronary angiography at one of the 28 different units in the country.

Type: This is a computer-based system; it collects data on all patients undergoing coronary angiographies or PTCA in Swedish hospitals. At a local level the nurses and physicians fill in all data at the time of procedure. Data was sent yearly to the national database by diskette or email, but the system is now Internet based, with interactive capabilities.

Details on data set: Registration includes background factors such as age sex, risk factors, function group, procedure data, and complications during and after investigations/treatment, primary decision after angiography and the primary result after intervention.

Coverage: Data are collected from 16 (68%) of the 28 units where coronary angiographies are performed and all 12 (100%) PTCA centres participate

American College of Cardiology (ACC) Cath Lab Module v2.0b

Devised by: The American College of Cardiology provides a service, for a fee (approx $2000). An institution can send data to the ACC and in return the ACC sends that institution annual reports. This is part of the National Cardiovascular Data Registry (ACC- NDCR).

Type: This a confidential quality measurement programme for cardiovascular specialists, hospitals, and catheterisation laboratories. The ACC provides comparison of the participant's practice patterns and outcomes to national and peer data group. Participants use this information for improving patient care, supporting local quality-improvement programmes, and communicating with regulatory and contracting organisations. The ACC certifies software vendors, insuring the data that is submitted is of the required quality.

Details on data set: The register collects the following data:

- Cardiac status—measurement of acute coronary syndrome time period, angina type, and non-invasive testing
- Adverse outcomes—Periprocedural MI and CK-MB levels, contrast reactions
- Performance measures—door to balloon/stent time
- Optional follow-up—6-month vital status (alive, expired, primary cause of death, readmission, readmission reason.

Coverage: The programme is multicentered, voluntary and national in scope.

British Cardiac Interventional Society Coronary Angioplasty Register (BCIS v5.1.2)

Devised by: This was devised and approved by The British Cardiac Interventional Society (BCIS) and the Central Cardiac Audit Database (CCAD) in 2003.

Type: Patients undergoing Percutaneous Coronary Intervention in the UK. This is a computer-based system and encrypted data are transmitted to a central database - the Central Cardiac Audit Database (CCAD).

Details on data set: Data are collected on the following; structure, appropriateness of the procedure, process/procedure and outcome of the procedure.

Coverage: 63 of the 64 centres provide data in the UK. However not all 63 centres provide the required completeness of quality data

The Mater Hospital Dublin Percutaneous Cardiovascular Interventional Register

Devised by: The Mater Cardiovascular Research Group devised this register in conjunction with DMF systems.

Type: Patients admitted to the Mater Public and Private hospitals that have undergone a percutaneous coronary intervention are included. This is a computer-based system that has been written in Microsoft Access TM.

Details on data set: Data collected includes demographic details, clinical status and investigations, procedures, immediate follow-up, long-term follow-up and quality of life.

Coverage: Data are collected from the Mater Public and Private Hospitals in Dublin, Ireland.

Shakespeare Register

Devised by: This European register is sponsored by the pharmaceutical industry.

Details on the data set: Data are collected on the following: baseline data, PCI data, follow-up after 30 days, follow-up after one-year.

Coverage: The following countries participate: UK, Germany, France, Italy, Portugal, Israel and Poland.

The 'Arbeitsgemeinschaft Leitender Kardiologischer Kranken-hausaertzte' in Germany (ALKK)

Devised by: The registry was devised by ALKK (The 'Arbeitsgemeinschaft Leitender Kardiologischer Kranken-hausaertzte' in Germany) in 1992.

Type: This is a computer-based system where data are collected on PTCA (>200,000 patients), on direct angioplasty in acute myocardial infarction (ca. 5000 patients), on coronary stenting (>50,000 patients), and on carotid stenting.

Details on the data set: The register includes data on baseline characteristics, the indication for the procedure, the immediate outcome for the procedure, and the in-hospital course.

Coverage: This registry collects core data on all patients undergoing a percutaneous coronary intervention in 86 participating German centres.

The Euro Heart Survey on Revascularisation for Ischaemic Heart Disease 2001

Devised by: this survey was devised by the Scientific Expert Committee for Euro Heart Revascularisation within the European Society of Cardiology in 2000. The data were collected between September 2001 and January 2002.

Type: each country has a national co-ordinator (a national authority in cardiology) who represents the Euro Heart Survey at national level and helps to select appropriate hospitals for the survey. The data are collected over a 1-4 month period by qualified DCOs (Data Collection Officers) and entered on-site in an electronic database. The content of the database is then transferred to the Euro Heart Survey Department at the Heart House (in Sophia Antipolis, France) via the Internet where it is submitted to a quality data check. When the data has successfully passed this procedure it is considered to be final and ready for analysis.

Details on data set: Angiography, PCI and CABG are the main topics in this survey, but data are also collected on the hospital facilities, risk factors, immediate outcome and one-year clinical outcome.

Coverage: 25 countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Georgia, Greece, Hungary, Ireland, Israel, Italy, Lithuania, the Netherlands, Poland, Portugal, Russia, Slovenia, Slovakia, Sweden, Switzerland, Turkey and UK.

Swiss Percutaneous Coronary Intervention Register

Devised By: the Swiss Society of Cardiology devised this register in 1987.

Type: This is a yearly questionnaire.

Details on data set: It is based on a standardised questionnaire that includes the minimal data set of the European Register of Coronary Catheter Interventions. Some quality control of the gathered data was assured by submitting a non-blinded summary to all involved cardiac catheterisation laboratories for corrections before open publication of individualised data in a Swiss medical journal once a year

Coverage: 25 institutions in Switzerland are involved (5 university hospitals, 10 public hospitals and 10 private hospitals).

Italian Drug Eluting Stent Registry (IDESR)

Devised by: the Italian Society of Cardiology.

Type: The enrollment of patients started on October 2002. The purpose of this registry was to verify the effective use of drug eluting stent (DES) in the 162 Italian cath lab and to evaluate if the indications are different/similar to that of other countries. Data about Italian patients who underwent PCI with DES implantation

were collected by a computer-based system. Information is written on the electronic web page of the Italian Society of Invasive Cardiology, named GISE.

Details on data set: Registration included background factors such as age sex, risk factors, function group, procedure data, and complications during and after investigations/treatment, type of DES deployed (diameter, length, apposition etc) and the primary result after intervention.

Coverage: Forty nine (49) Italian catheterisation laboratories participated to this registry and 2262 patients were enrolled from November the 1st 2002 to October the 12th 2003.

PCI Data Standards

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

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 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	The patient has no previous history of chronic renal failure	Code n2
		2	Yes		The patient has a history of chronic renal failure.	
		99	Unknown		Information missing	
PCI 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	Code n2
		2	Yes		The patient has had a previous percutaneous coronary	
		99	Unknown		Information missing	
ACS 2.09	Coronary artery bypass graft [CABG]	1	No	Indicate if the patient had a 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	
		99	Unknown		Information missing	
ACS 2.10	History of valvular heart disease	1	No	Indicate if the patient has a history of haemodynamically significant valvular heart disease or prior valvular heart surgery/replacement/intervention		Code n2
		2	Yes			
		99	Unknown		Information missing	
Risk Factors for Coronary Artery Disease						
PCI 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 and/or pipe	Patient has never smoked a tobacco product	Code n2
		2	Current		Patient regularly smokes one or more tobacco product 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	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 3.02	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	
PCI 3.03 MP	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	Code n2
		2	Yes		The patient does have a history of hypertension prior to this	
		99	Unknown		Information missing	
PCI 3.03 MP	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	Code n2
		2	Yes		The patient does have a history of hypercholesterolemia	
		99	Unknown		Information missing	
Admission Details and Initial Assessment						
PCI 5.01	Indication for percutaneous coronary intervention [PCI]	1	STEMI / primary PCI	Indicate the reason why the percutaneous coronary intervention was performed.		Code n2
		2	STEMI / rescue PCI			
		3	STEMI / facilitated PCI			
		4	NSTEMI (ongoing instability)			
		5	Unstable angina (ongoing instability)			
		6	Post STEMI (stabilised)			
		7	Post NSTEMI (stabilised)			
		8	Post unstable angina (stabilised)			
		9	Elective PCI (stable angina and / or documented ischaemia)			
		88	Others			
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 5.02	Symptom onset date and time (ACS patients)			Indicate the time of symptom onset that triggered the decision for PCI. (e.g. if a patient making uncomplicated recovery from STEMI treated by lysis develops recurrent pain requiring PCI at for example day 4, then day 4 is the time recorded).		DateTime
PCI 5.03	Date and time of admission/arrival at hospital (for ACS patients)			Date/Time of admission to first hospital (potentially of a series of hospitals) where cardiological treatment initiated (i.e. not necessarily the hospital where PCI is performed)		DateTime
PCI 5.04	Elevated biochemical marker pre procedure	1	No	Indicate if the patient's biochemical markers [Troponin T/I ,CK-MB and/or CK] were raised above the levels recognised in guidelines for diagnosis of acute myocardial infarction (NB these levels may vary between laboratories) pre procedure	The patients biochemical markers were not raised above the	Code n2
		2	Yes		The patients biochemical markers were raised above the	
		99	Unknown		Information missing	
PCI 5.05	Date and time of percutaneous coronary intervention [PCI]			Indicate the date and time the PCI was performed		DateTime
PCI 5.06	Cardiogenic shock at start of PCI	1	No	Indicate if the patient presented with cardiogenic shock before the PCI procedures requiring inotropes, intra-aortic balloon pump or CPS to support circulation		Code n2
		2	Yes			
		99	Unknown			

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 5.07	Haemodynamic support	1	No	Indicate if haemodynamic support was needed before the start of the PCI procedure	The patient did not require haemodynamic support before the start of the PCI procedure	Code n2
		2	Yes (IABP/ CP bypass)		The patient did require haemodynamic support, either an intra-aortic balloon pump or cardio-pulmonary bypass before the start of the PCI procedure	
		99	Unknown		Information missing	
Investigations for Coronary Artery Disease						
PCI 6.01	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 form angiography, echocardiography, nuclear imaging, magnetic resonance imaging etc.		Code n2
		2	Slightly reduced (41-50%)			
		3	Moderately reduced (31-			
		4	Severely reduced (<30%)			
		99	Unknown			
Angiogram Result (see appendix 5 for diagram of coronary arteries)						
PCI 6.02	Proximal right coronary artery conduit (pRCA) **[Segment No 1]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.03	Mid-right coronary artery conduit (mRCA) **[Segment No 2]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.04	Distal right coronary artery conduit (dRCA) **[Segment No 3]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.05	Right posterior descending artery (rPDA) **[Segment No 4]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.06	Left main coronary artery (LM) **[=Segment No 5]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.07	Proximal LAD artery (pLAD) **[Segment No 6]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.08	Mid-LAD artery (mLAD) **[Segment No 7]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.09	Distal LAD artery (dLAD) **[Segment No 8]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.10	First diagonal branch (1st Diag) **[Segment No 9]**			Indicate the percentage stenosis (0-100%)		n3

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 6.11	Second diagonal branch (2nd Diag) **[Segment No 10]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.12	Proximal circumflex coronary (pCIRC) **[Segment No 11]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.13	First obtuse marginal branch (1st OM) **[Segment No 12]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.14	Mid Circumflex artery (CIRC) **[Segment No 13]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.15	Right posterolateral sinister (Rpls) **[Segment No 14]**			Indicate the percentage stenosis (0-100%)		n3
PCI 6.16	Right descending posterior (Rdp) **[Segment No 15]**			Indicate the percentage stenosis (0-100%)		n3
Percutaneous Coronary Intervention (see table appendix 4)						
PCI 12.01	Segment No			Indicate for the treated segment the segment number		n3

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 12.03	Type of lesion	1	Type A	Indicate the type of lesion	Type A -Discrete (<10 mm length) -Concentric -Readily accessible -Non-angulated segment, <45 -Smooth contour -Little or no calcium -Less than totally occlusive -No ostial in location -No major side branch involvement -Absence of thrombus	Code n2
		2	Type B		Type B -Tubular (10-20 mm length) -Eccentric -Moderate tortuosity of proximal segment, >= 45, <90 -Irregular contour -Moderate to heavy circulation -Total occlusion <3 months old -Ostial location -Bifurcation lesion requiring double guidewire -Some thrombus present	
		3	Type C		Type C -Diffuse (>=20 mm length) -Excessive tortuosity of proximal segment -Extremely angulated segments, >=90 -Total occlusion >3months old -Inability to protect major side branches -Degenerated side branches with friable lesions	
		99	Unknown		Information missing	
PCI 12.04	In-stent re-stenosis	1	No	Indicate for the treated segment if there is in-stent re-stenosis	No in-stent re-stenosis in the treated segment	Code n2
		2	Yes		There is in-stent re-stenosis in the treated segment	
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 12.05	Bifurcation	1	No	Indicate if the lesion is at a bifurcation. A bifurcation is a division of a vessel into at least two branches, each of which is >2mm or greater in diameter. In a bifurcation the plaque extends on both sides of the bifurcation point. It need not progress down both branches, each of which is >2mm or greater [ACC]	The lesion is not at a bifurcation	Code n2
		2	Yes		The lesion is at a bifurcation	
		99	Unknown		Information missing	
PCI 12.06	TIMI flow before PCI	1	TIMI 0	Indicate for the segment identified the pre-PCI TIMI flow	No flow/ no perfusion.	Code n2
		2	TIMI 1		Slow penetration without perfusion.	
		3	TIMI 2		Partial flow/partial perfusion (greater than TIMI-1 but less than TIMI-3).	
		4	TIMI 3		Complete and brisk flow/complete perfusion	
		99	Unknown		Information missing	
PCI 12.07	TIMI flow after PCI	1	TIMI 0	Indicate for the segment identified the post-PCI TIMI flow	No flow/ no perfusion.	Code n2
		2	TIMI 1		Slow penetration without perfusion.	
		3	TIMI 2		Partial flow/partial perfusion (greater than TIMI-1 but less than TIMI-3).	
		4	TIMI 3		Complete and brisk flow/complete perfusion	
		99	Unknown		Information missing	
PCI 12.08	% Stenosis before PCI			Indicate for the treated segment the pre-PCI percent stenosis		n3
PCI 12.09	% Stenosis after PCI			Indicate for the treated segment the post- PCI percent stenosis		n3

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 12.10	Stent	1	No	Indicate for the treated segment if a stent was used		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 12.11	Direct stenting	1	No	Indicate for the treated segment if direct stenting was carried out, I.e. direct stent placement without balloon predilatation of the target lesion		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 12.12	Stent type	1	Bare Metal	Indicate for the treated segment the stent type		Code n2
		2	Coated			
		3	Drug-eluting			
		88	Other			
		99	Unknown		Information missing	
PCI 12.13	Drug-eluting type	1	Cypher	Indicate the drug-eluting type		Code n2
		2	Taxus			
		3	Trial drug eluting stent			
		99	Unknown		Information missing	
PCI 12.14	Stent/balloon size			Indicate for the treated segment the largest [maximum] vessel diameter or the largest [maximum] device diameter (balloon or stent) in millimetres		n1.1
PCI 12.15	Length of stent			Indicate the longest stented segment (or balloon if no stents) in millimetres used during the intervention. Add the length of all contiguous stents		n2
Percutaneous Coronary Intervention (other details)						
PCI 12.16	Percutaneous arterial access	1	Femoral	Indicate the primary location of percutaneous arterial entry	Femoral-Percutaneous puncture of either femoral artery	Code n2
		2	Brachial		Brachial-Either a cutdown or percutaneous puncture of either brachial artery.	
		3	Radial		Radial-Percutaneous radial approach.	
		88	Other		Other-Percutaneous entry other than femoral brachial, or radial approaches to the cardiovascular system.	
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 12.17	Diagnostic device used during procedure	1	None	Indicate diagnostic device (s) was used during this procedure		Multivalue
		2	IVUS		Intravenous ultra sound	
		3	Pressure wire			
		4	Flow Wire			
		5	Angioscope			
		6	Intracoronary Doppler			
		88	Other			
		99	Unknown		Information missing	
PCI 12.18	Therapeutic devices used	1	None	Indicate for the treated segment the intracoronary device(s) used. Tick in chronological order.		Multivalue
		2	Cutting balloon			
		3	Distal Protection Device			
		4	DCA		Direct Coronary Artretomy	
		5	Rotablator			
		6	Thrombectomy			
		7	Vascular brachytherapy			
		88	Other			
		99	Unknown		Information missing	
PCI 12.19	Peri-procedural complications	1	No peri-procedural complication	Indicate the peri-procedural complications		Multivalue
		2	Acute segment closure			
		3	Side branch occlusion			
		4	Coronary perforation			
		5	No flow/slow flow phenomenon			
		6	Heart block requiring pacing			
		7	DC cardioversion			
		8	Ventilated			
		9	Tamponade			
		10	Shock induced by procedure			
		11	Allergic reactions			
		12	Stroke			
		13	Cardiac arrest			
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 12.20	Coronary artery bypass graft (CABG)	1	No	Indicate if the patient underwent a CABG	The patient did not undergo a CABG	Code n2
		2	Emergency		The patient underwent an emergency CABG immediately post the PCI procedure	
		3	Planned		A decision has been made to perform a CABG in the future (non emergency)	
		99	Unknown		Information missing	
PCI 12.21	Vascular closure device	1	No	Indicate if a vascular closure device for percutaneous arterial management was used during or after this PCI procedure		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 12.22	Percutaneous arterial complications	1	None	Indicate if there were arterial percutaneous complications post PCI procedure. Note: Some of these complications occur immediately after the PCI procedure, while others will occur later during hospital stay.		Multivalue
		2	False aneurysm			
		3	Haemorrhage requiring			
		4	Arterial			
		5	AV Fistula			
		6	Infection			
		99	Unknown		Information missing	
Medication at the time of PCI						
PCI 7.01	Aspirin	1	No	Indicate whether the patient was on aspirin at the time of PCI	The patient was not taking aspirin at the time of PCI	Code n2
		2	Yes		The patient was taking aspirin at the time of PCI	
		99	Unknown		Information missing	
PCI 7.02	Antiplatelet	1	No	Indicate if the patient was given antiplatelet medication at the time of PCI	Antiplatelet were not administered at the time of PCI	Code n2
		2	Clopidogrel/Ticlopidine		Clopidogrel/Ticlopidine was administered at the time of PCI	
		3	Other antiplatelet agent		Other antiplatelet agent(s) was administered at the time of PCI	
		99	Unknown		Information missing	
PCI 7.03	Anticoagulants	1	No	Indicate if the patient was given anticoagulant medication at the time of PCI	Anticoagulants were not administered at the time of PCI	Code n2
		2	Vit. K antagonists		Vitamin K antagonists [e.g. warfarin, coumadin, other etc] were administered at the time of PCI	
		3	Oral thrombin inhibitors		Other thrombin agents [e.g. exanta] were administered at the time of PCI	
		8	Other anticoagulants agents		Other anticoagulants agents were administered at the time of PCI	
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 7.04	Glycoprotein IIb/IIIa	1	No	Indicate the glycoprotein IIb/IIIa type administered at the time of PCI procedure	Glycoprotein IIb/IIIa were not administered at the time of PCI	Code n2
		2	Abciximab		Abciximab was administered at the time of PCI	
		3	Eptifibitide		Eptifibitide was administered at the time of PCI	
		4	Tirofiban		Tirofiban was administered at the time of PCI	
		99	Unknown		Information missing	
PCI 7.05	Heparin/Low molecular weight heparin	1	No	Indicate if heparin and/or LMWH were administered at the time of PCI	Unfractionated heparin and/or LMWH were not administered at the time of PCI	Code n2
		2	Unfractionated heparin		Unfractionated heparin was administered at the time of PCI	
		3	LMWH		LMWH was administered at the time of PCI	
		4	LMWH + Unfractionated heparin		Both unfractionated heparin and LMWH were administered at the time of PCI	
		99	Unknown		Information missing	
Outcome						
PCI 8.04	Elevated biochemical marker post procedure	1	No	Indicate if the patient's biochemical markers [Troponin T/I ,CK-MB and/or CK] was raised above the levels recognised in guidelines for diagnosis of acute myocardial infarction (NB these levels may vary between laboratories) after the PCI procedure		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 8.01	Myocardial (re)infarction post procedure	1	No	Indicate if the patient developed a myocardial (re)infarction after the index PCI procedure (other than procedural related increases in cardiac markers)		Code n2
		2	Yes			
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 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 hospital stay	Code n2
		2	Intracranial bleed		The patient had an intracranial bleed documented by one of the following: - bleeding in or around the brain - haemorrhagic conversion of a primary ischaemic stroke - subarachnoid haemorrhage - intracerebral haemorrhage - other (subdural and epidural)	
		3	Retroperitoneal bleed (major)		The patient had a major retroperitonel bleed. **Major**: Overt clinical bleeding associated with a drop in haemoglobin of greater than 5 g/dl (0.5g/l) or in haemocrit of 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 (0.5g/l) or in haemocrit of 15% (absolute)	
		99	Unknown		Information missing	
PCI 8.03	Stroke	1	No	Indicate if the patient experienced a stroke/cerebrovascular accident (CVA) *after the PCI* , as evidenced by persistent loss of neurological function caused by an ischaemic event.		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 8.05	Renal failure requiring dialysis	1	No	Indicate if renal failure requiring dialysis occurred during this hospital admission		Code n2
		2	Yes			
		99	Unknown		Information missing	
PCI 8.11	Vital status at discharge	1	Dead	Indicate the patients vital status at discharge		Code n2
		2	Alive			
		99	Unknown		Information missing	
PCI 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
PCI 8.13	Discharge destination	1	Home	Indicate the patient discharge destination		Code n2
		2	Transferred to other hospital			
		3	Convalescent/ Rehabilitation centre			

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
		99	Unknown		Information missing	
Medication at discharge						
PCI 9.01	Aspirin	1	No	Indicate if the patient was prescribed aspirin on discharge.	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	
PCI 9.02	Antiplatelet	1	No	Indicate if the patient was prescribed antiplatelet medication on discharge from hospital	The patient was not prescribed antiplatelet on discharge from hospital	Code n2
		2	Ticlopidine/Clopidogrel		The patient was prescribed clopidogrel/ticlopidine on discharge from hospital	
		3	Other antiplatelet agent		The patient was prescribed other antiplatelet agents on discharge	
		99	Unknown		Information missing	
PCI 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 [exanta] on discharge from hospital	
		99	Other		The patient was prescribed other anticoagulants on discharge from hospital	
		99	Unknown		Information missing	
PCI 9.04	Beta-blockers	1	No	Indicate if the patient was prescribed Beta-Blockers on discharge.	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	
PCI 9.05	ACE inhibitors	1	No	Indicate if the patient was prescribed ACE inhibitors on discharge.	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	
PCI 9.06	Angiotensin II receptor blockers	1	No	Indicate if the patient was prescribed angiotensin II receptor blockers on discharge.	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	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 9.07	Diabetic control	1	None	Indicate the **main method** of diabetic treatment the patient was prescribed on discharge	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	
PCI 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	
PCI 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	
PCI 9.10	Glycoprotein IIb/IIIa	1	No	Indicate the use of IV Glycoprotein IIb/IIIa inhibitors on discharge from hospital	The patient was not prescribed glycoprotein IIb/IIIa on discharge from hospital	Code n2
		2	Abciximab		The patient was prescribed abciximab on discharge from hospital	
		3	Eptifibitide		The patient was prescribed eptifibitide on discharge from hospital	
		4	Tirofiban		The patient was prescribed tirofiban on discharge from hospital	
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 9.11	Heparin/Low molecular weight heparin	1	No	Indicate if the patient was prescribed unfractionated heparin/LMWH on discharge.	Unfractionated heparin and/or LMWH were not prescribed on discharge	Code n2
		2	Unfractionated heparin		Unfractionated heparin was prescribed on discharge	
		3	LMWH		LMWH was administered prescribed on discharge	
		4	LMWH + Unfractionated heparin		Both unfractionated heparin and LMWH were prescribed on discharge	
		99	Unknown		Information missing	
Follow Up (30 days and 12months) Date and status at 30 days and 12 months after the index event obtained by any reliable source (outpatient visit, medical record, telephone call, administrative database						
PCI 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
PCI 10.02	Survival status at follow up	1	Dead	Indicate the patient vital status at follow up		Code n2
		2	Alive			
		99	Unknown		Information missing	
PCI 10.03	Date of death			If the patient died indicate the date of death		Date
PCI 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 - Ischemic 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 No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 10.05	Anginal status	1	CCS 0	Indicate the patients anginal status at the time of follow up	No angina	Code n2
		2	CCS I		Ordinary physical activity, such as walking and climbing stairs, does not cause angina. Angina 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 meters) 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 meters) 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	
PCI 10.06	Dyspnoea	1	NYHA I	According to the NYHA classify the patients breathing status	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	
PCI 10.07	Date of first hospital readmission since discharge			If the patient is readmitted to hospital indicate the date		Code n2
PCI 10.08	Myocardial infarction [MI]	1	No	Indicate if the patient was diagnosed as having an MI since discharge		Code n2
		2	Yes			
		99	Unknown			

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 10.09	Myocardial Infarction [MI] date			Indicate the date the patient had the myocardial infarction		Code n2
PCI 10.10	Stroke	1	No	Indicate if the patient was diagnosed as having a stroke since discharge, as evidenced by persistent loss of neurological function caused by an ischaemic event.		Code n2
		2	Yes			
		99	Unknown			
PCI 10.11	Stroke date			Indicate the date of stroke		Date
PCI 10.12	Percutaneous coronary intervention [PCI]	1	No	Indicate if the patient had a percutaneous coronary intervention since the date of discharge		Code n2
		2	Yes			
		99	Unknown			
PCI 10.13	Percutaneous coronary intervention [PCI] date			Indicate the date of PCI		Date
PCI 10.14	Coronary artery bypass graft [CABG]	1	No	Indicate if the patient had a coronary artery bypass graft [CABG] since the date of discharge		Code n2
		2	Yes			
		99	Unknown			
PCI 10.15	Coronary artery bypass graft [CABG] date			Indicate the date of CABG		Date
PCI 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						
PCI 11.01	Aspirin	1	No	On follow up indicate if the patient is currently taking Aspirin	The patient is not taking aspirin regularly	Code n2
		2	Yes		The patient is taking aspirin regularly	
		99	Unknown		Information missing	
PCI 11.02	Antiplatelet	1	No	On follow-up indicate if the patient is taking antiplatelet medication 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	
		99	Unknown		Information missing	

ID No.	Field	Short	Field content	Definition of Field	Definition of field options	Data
PCI 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 [exanta] regularly	
		88	Other		The patient is taking other anticoagulant medication regularly.	
		99	Unknown		Information missing	
PCI 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	
PCI 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	
PCI 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	
PCI 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	
PCI 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	
PCI 11.09	Non-statin lipid lowering agents	1	None	On follow-up indicate if the patient is 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.	
		8	Other non-statin		The patient is taking other non-statin lipid lowering agent regularly.	
		99	Unknown		Information missing	

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.

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

Biochemical marker evidence of MI. 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

Defining reference control values (MI diagnostic limit and upper limit of normal): 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.

Special circumstances (for all types of MI):

• *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 CKMB (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 CKMB (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

Classification of ST-elevation MI (STEMI) vs. non- STEMI.

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. STEMI. 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. NSTEMI. 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

Or

3. BBB/uncertain type: 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. Q-wave MI: 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. Non–Q-wave MI: The absence of new Q waves as defined above on ECGs performed at least 12 hours after the event

Or

3. BBB/uncertain type of MI: Left BBB (new or old) or paced rhythm that obscures assessment of Q waves

Appendix 2

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 i

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. Implementer 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]

Appendix 3

Percutaneous Coronary Intervention Expert Committee

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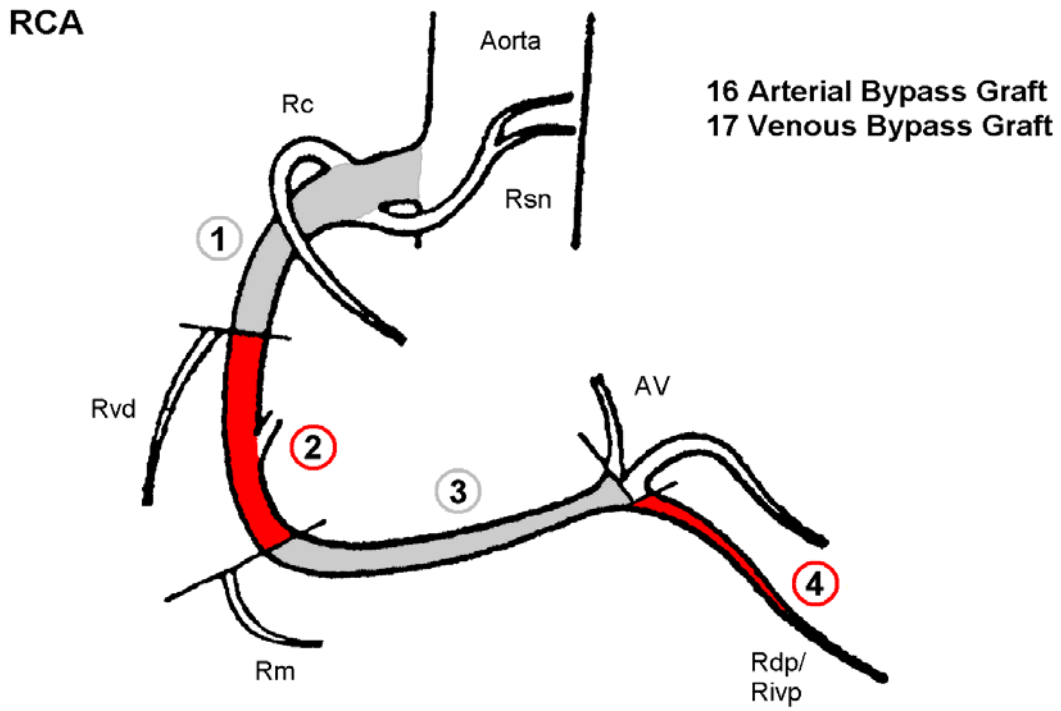
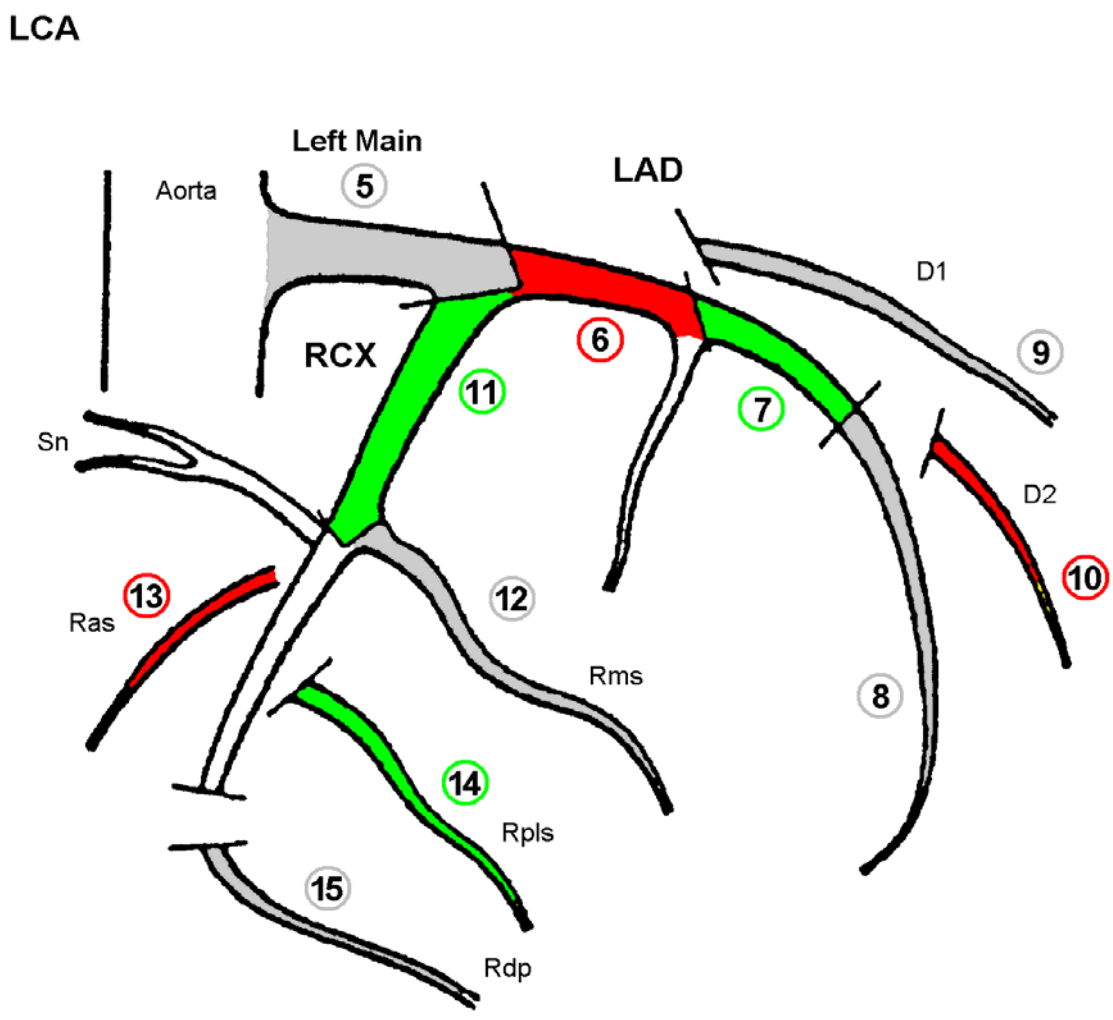
Prof. Jean Marco, Unité de cardiologie Interventionnelle, Clinique Pasteur, Toulouse Cedex 3, France

Appendix 4


PCI Procedure
Segment
Lesion Type
In-stent restenosis
Bifurcation
TIMI pre PCI
TIMI post PCI
Stenosis pre PCI
Stenosis post PCI
Balloon size
Stent Implanted
Stent Type
Drug Eluting
No. of stents
Stent length

Appendix 5


RCA
Aorta
Rc
Rsn
16 Arterial Bypass Graft
17 Venous Bypass Graft
1
Rvd
2
AV
3
4
Rm
Rdp/
Rivp


LCA
Left Main
Aorta
5
LAD
D1
RCX
6
9
11
7
Sn
D2
13
10
Ras
12
Rms
8
14
Rpls
15
Rdp