Data standards for heart failure: The European Unified Registries for
Heart Care Evaluation and Randomised Trials (EuroHeart)

In collaboration with the Heart Failure Association (HFA) of the European Society of Cardiology



**Table S1.** Level 1 variables with their permissible values and definitions.

|  |  |  |  |
| --- | --- | --- | --- |
| **Data field** | **Permissible values**  | **Definition** | **Registry** |
| **Demographics** |
| Patient identification number | Numeric | Enter the patient’s national identification number or a registry generated unique identification number. | Inpatient/Outpatient |
| Hospital identification number | Numeric | Enter the hospital’s unique identification number. | Inpatient/Outpatient |
| Date of birth | Date | Enter the patient’s date of birth. | Inpatient/Outpatient |
| Forename | String | Enter the patient’s forename. | Inpatient/Outpatient |
| Sex | * Female
* Male
 | Enter the patient’s sex at birth as either female or male. | Inpatient/Outpatient |
| **Patient characteristics and comorbidities** |
| Height | Numeric | Unknown | Enter the patient’s height at encounter (in centimetres [cm]). | Inpatient/Outpatient |
| Weight | Numeric | Unknown | Enter the patient’s weight o at encounter (in kilograms [kg]). | Inpatient/Outpatient |
| Smoking status  | * Never smoked
* Former smoker
* Current smoker
* Unknown
 | Enter patient’s tobacco smoking status.Note: Never smoked is defined as a patient who has never smoked tobacco. Former smoker is defined as a patient who stopped smoking tobacco >1 month ago. Occasional smokers are considered former tobacco smokers. Current smoker is defined as a patient who is currently smoking tobacco at a regular basis. Unknown should only be entered if information about tobacco smoking has not been obtained. | Inpatient/Outpatient |
| Hypertension | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a diagnosis of hypertension made by a healthcare professional prior to this care encounter. Note: is defined as an office systolic blood pressure values ≥140 mmHg and/or diastolic blood pressure values ≥90 mmHg and includes all grades of hypertension regardless of treatment strategy.1  | Inpatient/Outpatient |
| Diabetes mellitus | * No
* Yes, diabetes mellitus type 1
* Yes, diabetes mellitus type 2
* Yes, diabetes mellitus of other/unspecified type
* Unknown
 | Enter whether the patient is known to have a diagnosis of diabetes mellitus made by a healthcare professional prior to this care encounter.Note: Diabetes mellitus is defined as HbA1c ≥48 mmol/mol (6.5%) or fasting blood glucose ≥7.0 mmol/L or based on random blood glucose/2 h plasma glucose test ≥11.1 mmol/L (on more than measurements) and includes all types of diabetes mellitus regardless of treatment strategy.2 | Inpatient/Outpatient |
| Chronic obstructive pulmonary disease | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a diagnosis of chronic obstructive pulmonary disease (COPD) made by a healthcare professional prior to this care encounter.Note: COPD is defined as a disease that is characterised by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually are caused by significant exposure to noxious particles or gases and influenced by host factors including abnormal lung development and includes all stages of COPD regardless of treatment strategy.3  | Inpatient/Outpatient |
| Moderate-severe chronic kidney disease | * No
* Yes
* Unknown
 | Enter whether the patient is known to have moderate or severe chronic kidney disease (CKD) prior to this care encounter.Note: Moderate or severe CKD is defined as CKD stage 3–5 (glomerular filtration rate [GFR] <60 mL/min/1.73 m2 or kidney failure including patients on regular dialysis).4 | Inpatient/Outpatient |
| Prior stroke | Multiple choice: * No
* Yes, ischaemic
* Yes, haemorrhagic
* Yes, unspecified
* Unknown
 | Enter whether the patient is known to have had a stroke prior to this care encounter. More than one option can be selected. Note: Stroke is defined as an acute episode of focal or global neurological dysfunction (lasting for ≥24 hours or until death) caused by an infarction or haemorrhage to the brain, spinal cord, or retina that is resulting in cell damage based on pathological, imaging, or other objective evidence. Stroke does not include nonvascular neurological deficits. Ischaemic stroke is defined as an acute episode of focal, cerebral, spinal, or retinal dysfunction that is caused by central nervous system infarction, where the neurological dysfunction lasts for ≥24 h. Ischaemic stroke may result in haemorrhage (haemorrhagic transformation). Haemorrhagic stroke is defined as an acute episode of focal or global neurological dysfunction of the brain, spinal cord or retina that is caused by a spontaneous (not traumatic) collection of intraparenchymal, intraventricular, and/or subarachnoid blood, where the neurological dysfunction lasts for ≥24 h. Haemorrhagic stroke does not include subdural hematomas. Unspecified stroke is defined as an acute episode of focal or global neurological dysfunction that is caused by a presumed infarction or haemorrhage to the central nervous system, where the neurological dysfunction lasts for ≥24 h but with insufficient information to allow categorisation as either ischaemic or haemorrhagic stroke.5 | Inpatient/Outpatient |
| Prior myocardial infarction | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a prior history of myocardial infarction before this care encounter.Note: Myocardial infarction is defined as a documented detection of a rise and/or fall of cardiac troponin with at least one value above the 99th percentile and/or symptoms suggestive of ischaemia, new significant ECG changes, imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemic aetiology or identification of a coronary thrombus by angiography/intracoronary imaging or by autopsy. History of myocardial infarction also includes episodes with symptoms suggestive of myocardial ischaemia accompanied by presumed new ischaemic ECG changes or ventricular fibrillation; coronary intervention-related myocardial infarction; and coronary artery bypass graft (CABG)-related myocardial infarction.6 | Inpatient/Outpatient |
| Prior heart transplant  | * No
* Yes
* Unknown
 | Enter whether the patient is known to have had a heart transplant prior to this care encounter.Note: Heart transplantation is defined as a surgery in which a failing, diseased heart is replaced with a healthier donor heart.7 | Inpatient/Outpatient |
| Atrial fibrillation or atrial flutter | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a documented history of atrial fibrillation (AF) or atrial flutter (AFL) made by a healthcare professional prior to this care encounter.Note: AF is defined as ﻿a supraventricular tachyarrhythmia with uncoordinated atrial electrical activation and consequently ineffective atrial contraction. The minimum duration of an ECG tracing of AF required to establish the diagnosis of clinical AF is at least 30 seconds, or entire 12-lead ECG. AFL is defined as ﻿a supraventricular tachyarrhythmia with coordinated but overly rapid atrial electrical activation, usually with some degree of atrioventricular (AV) node conduction block. The minimum duration of an ECG tracing of AFL required to establish the diagnosis of clinical AFL is at least 30 seconds, or entire 12-lead ECG.8 | Inpatient/Outpatient |
| Prior cardiac therapeutic or monitoring implantable devices | Multiple choice: * No
* Transvenous permanent pacemaker
* Leadless pacemaker
* Transvenous ICD
* Subcutaneous ICD
* CRT-P
* CRT-D
* Cardiac contractility modulation device
* Baroreflex stimulation device
* Ventricular assist device CardioMEMS
* Implantable loop recorder
* Other
* Unknown
 | Enter whether the patient is known to have any of the following devices implanted prior to this care encounter. More than one option can be selected. Note: Transvenous permanent pacemaker is an electronic device that is implanted in the subcutaneous tissue and gives the heart an electrical stimulation through transvenous wires. Leadless pacemaker is an electronic device that is implanted directly into the right ventricle. Transvenous implantable cardiac defibrillator (ICD) is a device that is used to correct abnormal heartbeat through transvenous wires. Subcutaneous ICD is an ICD that is positioned in the subcutaneous tissue. Cardiac resynchronization therapy (CRT) device and pacemaker (CRT-P) is a pacemaker implanted to re-coordinate the bi-ventricular electrical activity in patients with heart failure. CRT-D is a biventricular pacemaker and defibrillator. Cardiac contractility modulation is an electrical device that provides nonexcitatory electrical signals during the cardiac absolute refractory period to improve contractility. Baroreflex stimulation device is an electrical stimulation technology that modifies the activity of the autonomic nervous system by stimulating the carotid baroreceptor to reduce peripheral resistance. Ventricular assist device is a mechanical pump that supports the right, left, or both ventricles. CardioMEMS is an implantable device that allows the remote monitoring of the pulmonary artery pressure. Implantable loop recorder is a device that allows remote heart rhythm monitoring.9 | Inpatient/Outpatient |
| Prior interventions  | Multiple choice: * No
* Transcatheter aortic valve implantation
* MitraClip
* Transcatheter tricuspid valve repair
* Interatrial shunt device
* Catheter ablation
* Percutaneous coronary intervention
* Coronary artery bypass graft surgery
* Open heart valve surgery
* Other
* Unknown
 | Enter whether the patient is known to have any of the following interventions performed prior to this care encounter. More than one option can be selected. Note: Transcatheter aortic valve implantation is defined as transcatheter implantation of aortic valve to treat aortic stenosis. MitraClip is a device used to reduce mitral valve regurgitation by attaching the anterior and the posterior mitral valve leaflets by a clip. Transcatheter tricuspid valve repair is a percutaneous intervention on the tricuspid valve using a device to reduce tricuspid valve regurgitation. Interatrial shunt device is defined as the creation of a left-to-right interatrial shunt to decrease the pulmonary capillary wedge and left atrial pressure. Catheter ablation is an invasive procedure performed to treat a faulty electrical pathway within segments of the heart to terminate or prevent cardiac arrhythmias. Percutaneous coronary intervention is the placement of an angioplasty guidewire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or a graft for the purpose of mechanical coronary revascularisation. The assessment of coronary lesion severity by fluoroscopy, intracoronary imaging (e.g. intravascular ultrasonography) or physiology (e.g. fractional flow reserve) is not considered a PCI procedure. Coronary artery bypass graft surgery is a procedure that involves sternotomy to bypass diseased segment(s) of the coronary tree using blood vessels derived other parts of the body and connected to the aorta. Open heart valve surgery is a surgical intervention on a heart valve that involves sternotomy.10-12 | Inpatient/Outpatient |
| Heart failure, aetiology | Multiple choice: * Ischaemic heart disease
* Hypertension
* Valvular heart disease
* Arrhythmia
* Cardiomyopathy
* Congenital heart disease
* Infective
* Drug induced
* Infiltrative
* Storage disorders
* Endomyocardial disease
* Pericardial disease
* Metabolic disorder
* Neuromuscular disease
* Other
* Unknown
 | Enter the most likely cause(s) for heart failure syndrome as perceived by the managing team. More than option can be selected.Note: Ischaemic heart disease includes prior myocardial infarction or chronic coronary syndrome. Hypertension should be selected when arterial hypertension is believed to be a major cause for the heart failure. Valvular heart disease includes primary, secondary, and congenital valve disease. Arrhythmia includes both atrial and ventricular arrhythmia. Cardiomyopathy includes dilated, hypertrophic, restrictive or other causes of cardiomyopathy. Infective include viral myocarditis, HIV, or other infective aetiologies (e.g. Chagas disease). Drug-induced includes cardiotoxic drugs such as anthracyclines and trastuzumab. Infiltrative includes amyloidosis, sarcoidosis or neoplastic infiltration. Storage disorders includes diseases such as haemochromatosis and fabry. Endomyocardial disease includes endomyocardial fibrosis or eosinophilia, post-radiotherapy and carcinoid. Pericardial disease includes calcification and infiltrative pathologies of the pericardium. Metabolic includes diseases such as endocrine diseases, nutritional diseases and autoimmune diseases. Neuromuscular disease includes Friedreich’s ataxia, Muscular dystrophy, etc.13 | Inpatient/Outpatient |
| Heart failure, date of diagnosis | Date | Unknown | Enter the date when the clinical diagnosis of heart failure was made by a healthcare professional.  | Inpatient/Outpatient |
| Heart failure, duration | * New-onset
* <1 month
* 1-6 months
* 6-18 months
* >18 months
* Unknown
 | Enter the duration since heart failure diagnosis. Indicate the duration which best describes the time frame from when the diagnosis of heart failure was made. New onset indicates that the heart failure diagnosis was made during the current episode of care. | Inpatient/Outpatient |
| **Presentation details** |
| Type of encounter  | Acute hospital admission Planned hospital admission Unplanned outpatient encounterPlanned outpatient encounter  | Enter the type of encounter for this episode of care. Note: Acute hospital admission is defined as an admission to hospital (from community or another healthcare facility) where heart failure is the main or the major cause for hospitalisation (e.g. new or worsening symptoms of heart failure, objective evidence of new or worsening heart failure, and/or initiation or intensification of heart failure treatment), and that the length of stay is at least 24 hours. Planned hospital admission is defined as a planned hospitalisation for an intervention or treatment for heart failure. Unplanned outpatient encounter is defined as an unplanned visit to an outpatient setting such as a clinic or day-care centre for urgent input (e.g. intravenous diuretics), but without hospital admission. Planned outpatient encounter is defined as a planned clinic visit or a review in the community by a qualified healthcare professional.   | Inpatient/Outpatient |
| Admission/Visit date | Date  | Enter the date when the patient arrived in the hospital or had an outpatient visit. | Inpatient/Outpatient |
| NYHA class | * NYHA class I
* NYHA class II
* NYHA class III
* NYHA class IV
* Unknown
 | Enter the patient’s New York Heart Association (NYHA) class at the time of hospital admission or outpatient visit for this episode of care.Note: NYHA class I is defined as no limitations of physical activity. Ordinary physical activity does not cause undue fatigue, palpitations, or dyspnoea. NYHA class II is defined as slight limitation of physical activity. The patient is comfortable at rest. Ordinary physical activity results in fatigue, palpitations, or dyspnoea. NYHA class III is defined as marked limitation of physical activity. The patient is comfortable at rest. Less than ordinary activity causes fatigue, palpitations, or dyspnoea. NYHA class IV is defined as inability to carry on any physical activity without discomfort. Heart failure symptoms are present even at rest or with minimal exertion.13 | Inpatient/Outpatient |
| Killip class | * Killip class I
* Killip class II
* Killip class III
* Killip class IV
* Unknown
 | Enter the patient’s Killip class at the time of hospital admission or outpatient visit for this episode of care.Note: Killip class I is defined as patients with no clinical signs of heart failure. Killip class II is defined as patients with rales or crackles in the lungs, S3 gallop, or elevated jugular venous pressure. Killip class III is defined as patients with pulmonary oedema. Killip class IV is defined as patients in cardiogenic shock.14 | Inpatient/Outpatient |
| Systolic blood pressure (mmHg) | Numeric | Unknown | Enter the patient's first recorded systolic blood pressure (in millimetres of mercury) at the time of hospital admission or outpatient visit for this episode of care.Note: Systolic blood pressure should be the first pressure recorded by a healthcare professional, including primary care physician, ambulance personnel or emergency department staff. | Inpatient/Outpatient |
| Heart rate (bpm) | Numeric | Unknown | Enter the patient's first recorded heart rate (in beats per minute) at the time of hospital admission or outpatient visit for this episode of care.Note: Heart rate should be the first heart rate recorded by a healthcare professional, including primary care physician, ambulance personnel or emergency department staff or the heart rate on the first ECG. | Inpatient/Outpatient |
| **Prescribed medication prior to encounter** |
| **Health-related quality-of-life** |
| Quality-of-life, assessment  | * No
* Yes
* Unknown
 | Enter whether the patient’s health-related quality of life was assessed during this episode of care. | Inpatient/Outpatient |
| Quality-of-life, tool  | Multiple choice: * KCCQ
* MLHFQ
* EQ5D
* SF-12
* SF-36
* PROMIS
* PHQ
* Other
* Unknown
 | Enter the tool which was used to measure the patient’s health-related quality of life during this episode of care. More than one option can be selected. KCCQ is the Kansas City Cardiomyopathy Questionnaire, MLHFQ is the Minnesota Living with Heart Failure Questionnaire, EQ5D is the EuroQol questionnaires, SF-12 and SF-36 are the 12- and 36-Item Short Form Survey (SF), PROMIS is the Patient-Reported Outcomes Measurement Information System, and PHQ is the Patient Health Questionnaire.15-20 | Inpatient/Outpatient |
| **Tests** |
| Natriuretic peptide | * No
* BNP
* NT-proBNP
* Unknown
 | Enter whether a natriuretic peptide was measured during this episode of care.Note: For inpatients within the first 24 hours of admission to hospital and for outpatients on the visit day or the most recent value within the previous month. | Inpatient/Outpatient |
| BNP (ng/L)  | Numeric | Unknown | Enter the first recorded level of BNP collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in ng/L). | Inpatient/Outpatient |
| NT-proBNP (ng/L) | Numeric | Unknown | Enter the first recorded level of NT-proBNP collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in ng/L). | Inpatient/Outpatient |
| Haemoglobin (g/L) | Numeric | Unknown | Enter the first recorded level of haemoglobin collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in g/L). | Inpatient/Outpatient |
| Creatinine (µmol/L) | Numeric | Unknown | Enter the first recorded level of creatinine collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in µmol/L). | Inpatient/Outpatient |
| Sodium (mmol/L) | Numeric | Unknown | Enter the first recorded level of sodium collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in mmol/L). | Inpatient/Outpatient |
| Potassium (mmol/L) | Numeric | Unknown | Enter the first recorded level of potassium collected within the first 24 hours of hospital admission. For outpatients, enter the value on the visit day or the most recent value within the previous month (in mmol /L). | Inpatient/Outpatient |
| Transferrin saturation (%) | Numeric | Unknown | Enter the first transferrin saturation recorded during the hospital stay. For outpatients, enter the value on the visit day or the most recent value within the previous month (in %). | Inpatient/Outpatient |
| ECG, atrial rhythm | * Sinus rhythm
* Atrial fibrillation or atrial flutter
* Paced rhythm
* Other
* Unknown
 | Enter the dominant atrial rhythm according to the first recorded ECG during this episode of care. For outpatients, enter the rhythm on the visit day or the most recent rhythm within the previous month. The option that best describes the findings should be selected.Note: Sinus rhythm is defined as a finding on the ECG of an atrial rhythm, which originates from the sinoatrial node. Sinus rhythm also includes atrioventricular (AV) block type I and sinus-brady/tachycardia without circulatory effect. Atrial fibrillation is defined as a supraventricular tachyarrhythmia characterised by uncoordinated atrial activity with consequent deterioration of atrial mechanical function. On the ECG, atrial fibrillation is characterised by the replacement of consistent P waves with rapid oscillations or fibrillation waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact. Atrial flutter is defined as a cardiac arrhythmia arising in the atrium, which has a regular rate typically between 250 and 350 bpm (cycle length 240–170 ms) in the absence of antiarrhythmic drugs. Paced rhythm indicates that the atrial contraction is generated by an atrial pacing lead. Unknown is to be selected only if this information is impossible to obtain.8 | Inpatient/Outpatient |
| ECG, ventricular conduction  | * Normal
* Left bundle branch block (LBBB)
* Right bundle branch block (RBBB)
* Ventricular paced rhythm
* Ventricular tachycardia
* Other
* Unknown
 | Enter the dominant ventricular conduction according to the first recorded ECG during this episode of care. For outpatients, enter the ventricular conduction on the visit day or the most recent ventricular conduction within the previous month. The option that best describes the findings should be selected.Note: Normal is defined as no presence of QRS abnormalities. Left bundle branch block (LBBB) is defined as QRS duration of ≥120 ms, delayed onset of intrinsicoid deflection in leads I, V5, and V6 ≥60 ms; broad and notched or slurred R waves in I, aVL, V5, and V6; RS or QS complexes in right precordial leads; ST segment and T waves in opposite polarity to the major QRS deflection. Right Bundle Branch Block (RBBB) is defined as QRS duration of ≥120 ms, rsR' or rSR' complexes in V1 and V2, delayed onset of intrinsicoid, deflection in V1 and V2 >50 ms, broad, slurred S wave in I, V5, and V6 secondary STT wave changes. Ventricular paced rhythm is defined as cardiac rhythm initiated by an electrical impulse from a mechanical cardiac pacemaker with electrode impulse in the ventricle. Ventricular tachycardia is defined as a wide complex tachyarrhythmia from a ventricular origin. Other includes other QRS changes including incomplete RBBB or LBBB, fascicular block, etc. Unknown is to be selected only if this information is impossible to obtain.8 | Inpatient/Outpatient |
| ECG, QRS duration (ms) | Numeric | Unknown | Enter the QRS duration according to the first recorded ECG during the hospital admission. For outpatients, enter the QRS duration on the visit day or the most recent QRS duration within the previous month (in milliseconds). | Inpatient/Outpatient |
| Left ventricular ejection fraction (%) | Numeric | Unknown  | Enter the patient’s left ventricular ejection fraction (in percentage) as recorded on the most recent evaluation. Note: Please enter the exact numerical result or select unknown if a range has been provided or if the left ventricular ejection fraction is unknown. | Inpatient/Outpatient |
| Left ventricular ejection fraction, range  | * ≥50%
* 41-49%
* 30-40%
* <30%
* Unknown
 | Enter the patient’s left ventricular ejection fraction (in range) as recorded on the most recent evaluation or select unknown if the left ventricular ejection fraction is unknown. | Inpatient/Outpatient |
| LVEF 30-40% | * >35%
* ≤35%
* Unknown
 | Enter whether the patient’s left ventricular ejection fraction is more or less/equal to 35%.  | Inpatient/Outpatient |
| Diastolic dysfunction | * No
* Yes, mild (grad I)
* Yes, moderate (grade II)
* Yes, severe (grade III)
* Yes, indeterminate
* Unknown
 | Enter whether the patient has a diastolic dysfunction as recorded on the most recent evaluation. Note: Diastolic dysfunction is a criteria diagnosis based on echocardiographically derived measurements. Echocardiographic features of diastolic dysfunction include left ventricular hypertrophy (relative wall thickness>0.42), left atrial volume index (>34 mL/m2 [sinus rhythm]), disturbance of trans-mitral doppler flow e.g. E/e’ >9 (at rest), and/or raised pulmonary artery systolic pressure (e.g. >35 mmHg).13 | Inpatient/Outpatient |
| **In-hospital management** |
| Loop diuretics | * No
* Yes
* Unknown
 | Enter whether loop diuretics (iv or oral) were administered during this hospital stay. | Inpatient  |
| Heart transplant  | * No
* Yes
* Unknown
 | Enter whether the patient received heart transplant during the current episode of care.  | Inpatient  |
| In-hospital implantation of cardiac therapeutic or monitoring devices  | Multiple choice: * No
* Transvenous permanent pacemaker
* Leadless pacemaker
* Transvenous ICD
* Subcutaneous ICD
* CRT-P
* CRT-D
* Cardiac contractility modulation device
* Baroreflex stimulation device
* Ventricular assist device CardioMEMS
* Implantable loop recorder
* Other
* Unknown
 | Enter whether the patient underwent an implantation of any of the following devices during this hospital stay. More than one option can be selected.Note: Transvenous permanent pacemaker is an electronic device that is implanted in the subcutaneous tissue and gives the heart an electrical stimulation through transvenous wires. Leadless pacemaker is an electronic device that is implanted directly into the right ventricle. Transvenous implantable cardiac defibrillator (ICD) is a device that is used to correct abnormal heartbeat through transvenous wires. Subcutaneous ICD is an ICD that is positioned in the subcutaneous tissue. Cardiac resynchronization therapy (CRT) device and pacemaker (CRT-P) is a pacemaker implanted to re-coordinate the bi-ventricular electrical activity in patients with heart failure. CRT-D is a biventricular pacemaker and defibrillator. Cardiac contractility modulation is an electrical device that provides nonexcitatory electrical signals during the cardiac absolute refractory period to improve contractility. Baroreflex stimulation device is an electrical stimulation technology that modifies the activity of the autonomic nervous system by stimulating the carotid baroreceptor to reduce peripheral resistance. Ventricular assist device is a mechanical pump that supports the right, left, or both ventricles. CardioMEMS is an implantable device that allows the remote monitoring of the pulmonary artery pressure. Implantable loop recorder is a device that allows remote heart rhythm monitoring.9 | Inpatient  |
| Interventions  | Multiple choice: * No
* Transcatheter aortic valve implantation
* MitraClip
* Transcatheter tricuspid valve repair
* Interatrial shunt device
* Catheter ablation
* Percutaneous coronary intervention
* Coronary artery bypass graft surgery
* Open heart valve surgery
* Other
* Unknown
 | Enter whether the patient underwent any of the following interventions during this hospital stay. More than one option can be selected. Note: Transcatheter aortic valve implantation is defined as transcatheter implantation of aortic valve to treat aortic stenosis. MitraClip is a device used to reduce mitral valve regurgitation by attaching the anterior and the posterior mitral valve leaflets by a clip. Transcatheter tricuspid valve repair is a percutaneous intervention on the tricuspid valve using a device to reduce tricuspid valve regurgitation. Interatrial shunt device is defined as the creation of a left-to-right interatrial shunt to decrease the pulmonary capillary wedge and left atrial pressure. Catheter ablation is an invasive procedure performed to treat a faulty electrical pathway within segments of the heart to terminate or prevent cardiac arrhythmias. Percutaneous coronary intervention is the placement of an angioplasty guidewire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or a graft for the purpose of mechanical coronary revascularisation. The assessment of coronary lesion severity by fluoroscopy, intracoronary imaging (e.g. intravascular ultrasonography) or physiology (e.g. fractional flow reserve) is not considered a PCI procedure. Coronary artery bypass graft surgery is a procedure that involves sternotomy to bypass diseased segment(s) of the coronary tree using blood vessels derived other parts of the body and connected to the aorta. Open heart valve surgery is a surgical intervention on a heart valve that involves sternotomy.10-12 | Inpatient |
| **Discharge details**  |
| In-hospital death | * No
* Yes
* Unknown
 | Enter whether the patient died during the hospital stay. | Inpatient  |
| Discharge date / Death date | Date  | Enter the date when the patient was discharged from the hospital or died during this hospital stay. | Inpatient  |
| Weight at discharge (kg) | Numeric | Unknown | Enter the last recorded weight for the patient prior to hospital discharge for this care encounter. | Inpatient  |
| Natriuretic peptide at discharge | * No
* BNP
* NT-pro BNP
* Unknown
 | Enter whether a natriuretic peptide was measured before hospital discharge (excluding the first 24 hours of hospital admission). | Inpatient  |
| BNP (ng/L)  | Numeric | Unknown | Enter the level of the brain natriuretic peptide (BNP) which was measured before hospital discharge (excluding the first 24 hours of hospital admission). | Inpatient  |
| NT-proBNP (ng/L) | Numeric| Unknown | Enter the level of the N-terminal prohormone of brain natriuretic peptide (NT-proBNP) which was measured before hospital discharge (excluding the first 24 hours of hospital admission). | Inpatient  |
| Referrals to cardiac rehabilitation/palliative team | Multiple choice: * No
* Cardiac rehabilitation
* Palliative care team
* Unknown
 | Enter whether the patient was referred to the cardiac rehabilitation and/or palliative care teams during this care encounter. More than one option can be selected. | Inpatient/Outpatient  |
| Referral for cardiac therapeutic or monitoring implantable devices | Multiple choice: * No
* Transvenous permanent pacemaker
* Leadless pacemaker
* Transvenous ICD
* Subcutaneous ICD
* CRT-P
* CRT-D
* Cardiac contractility modulation device
* Baroreflex stimulation device
* Ventricular assist device CardioMEMS
* Implantable loop recorder
* Other
* Unknown
 | Enter whether the patient was referred for an implantation of any of the following devices. More than one option can be selected.Note: Transvenous permanent pacemaker is an electronic device that is implanted in the subcutaneous tissue and gives the heart an electrical stimulation through transvenous wires. Leadless pacemaker is an electronic device that is implanted directly into the right ventricle. Transvenous implantable cardiac defibrillator (ICD) is a device that is used to correct abnormal heartbeat through transvenous wires. Subcutaneous ICD is an ICD that is positioned in the subcutaneous tissue. Cardiac resynchronization therapy (CRT) device and pacemaker (CRT-P) is a pacemaker implanted to re-coordinate the bi-ventricular electrical activity in patients with heart failure. CRT-D is a biventricular pacemaker and defibrillator. Cardiac contractility modulation is an electrical device that provides nonexcitatory electrical signals during the cardiac absolute refractory period to improve contractility. Baroreflex stimulation device is an electrical stimulation technology that modifies the activity of the autonomic nervous system by stimulating the carotid baroreceptor to reduce peripheral resistance. Ventricular assist device is a mechanical pump that supports the right, left, or both ventricles. CardioMEMS is an implantable device that allows the remote monitoring of the pulmonary artery pressure. Implantable loop recorder is a device that allows remote heart rhythm monitoring.9 | Inpatient/Outpatient  |
| Planned follow up within 4 weeks from discharge  | * No
* Yes
* Unknown
 | Enter whether a follow up was arranged for the patient within 4 weeks from hospital discharge.Note: Follow up is defined as an in-person or virtual consultation with a qualified healthcare professional who has received training in managing heart failure patients.  | Inpatient  |
| **Discharge medications/Medications post-encounter** |
| Angiotensin-converting enzyme inhibitors | * No
* Captopril
* Enalapril
* Lisinopril
* Ramipril
* Trandolapril
* Perindopril
* Fosinopril
* Quinapril
* Other
* Unknown
 | Enter whether the patient was discharged on angiotensin-converting enzyme (ACE) inhibitors.Note: For combination drugs, enter details about both drug classes. | Inpatient/Outpatient |
| Angiotensin-converting enzyme inhibitors, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the angiotensin-converting enzyme (ACE) inhibitors at the time of hospital discharge/visit (in mg). | Inpatient/Outpatient |
| Angiotensin II receptor blockers | * No
* Losartan
* Valsartan
* Candesartan
* Irbesartan
* Other
* Unknown
 | Enter whether the patient was discharged on angiotensin II receptor blockers (ARB).Note: For combination drugs (except angiotensin receptor-neprilysin inhibitors), enter details about both drug classes. | Inpatient/Outpatient |
| Angiotensin II receptor blockers, daily dosage (mg) | Numeric [**Limit 2 – 320**] zero decimals | Unknown | Enter the total daily dose of the angiotensin II receptor blockers (ARB) at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Angiotensin receptor-neprilysin inhibitors | * No
* Sacubitril/Valsartan
* Unknown
 | Enter whether the patient was discharged on angiotensin receptor-neprilysin inhibitor (ARNI). | Inpatient/Outpatient |
| Angiotensin receptor-neprilysin inhibitors, daily dosage (mg) | * 24mg/26 mg bid
* 49mg/51 mg bid
* 97 mg/103 mg bid
* Other
* Unknown
 | Enter the total daily dose of the angiotensin receptor-neprilysin inhibitor (ARNI) at the time of hospital discharge (in mg).  | Inpatient/Outpatient |
| Mineralocorticoid receptor antagonists | * No
* Spironolactone
* Eplerenone
* Other
* Unknown
 | Enter whether the patient was discharged on mineralocorticoid receptor antagonists (MRA). | Inpatient/Outpatient |
| Mineralocorticoid receptor antagonists, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the mineralocorticoid receptor antagonists (MRA) at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Beta blockers | * No
* Metoprolol succinate
* Bisoprolol
* Carvedilol
* Nebivolol
* Other
* Unknown
 | Enter whether the patient was discharged on beta blockers. | Inpatient/Outpatient |
| Beta blockers, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the beta blockers at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Ivabradine | * No
* Yes
* Unknown
 | Enter whether the patient was discharged on ivabradine.  | Inpatient/Outpatient |
| Ivabradine, daily dosage (mg) | Numeric | Unknown  | Enter the total daily dose of ivabradine at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Digitalis | * No
* Digoxin
* Digitoxin
* Unknown
 | Enter whether the patient was discharged on digitalis. | Inpatient/Outpatient |
| Loop diuretics | Multiple choice: * No
* Furosemide
* Bumetanide
* Torasemide
* Other
* Unknown
 | Enter whether the patient was discharged on loop diuretics.Note: For combination drugs, enter details about both drug classes. More than one option can be selected. | Inpatient/Outpatient |
| Non-loop diuretics | Multiple choice * No
* Bendroflumethiazide
* Hydrochlorothiazide
* Metolazone
* lndapamide
* Other
* Unknown
 | Enter whether the patient was discharged on non-loop diuretics.Note: For combination drugs, enter details about both drug classes. More than one option can be selected. | Inpatient/Outpatient |
| Intravenous iron | * No
* Ferric carboxymaltose
* Ferric derisomaltose
* Iron sucrose
* Other
* Unknown
 | Enter whether the patient was prescribed intravenous iron during this care encounter. Note: administration of intravenous iron can be performed during or after the current episode of care (e.g. in a day case unit). | Inpatient/Outpatient |
| Vericiguat | * No
* Yes
* Unknown
 | Enter whether the patient was discharged on vericiguat. | Inpatient/Outpatient |
| Omecamtiv mecarbil | * No
* Yes
* Unknown
 | Enter whether the patient was discharged on omecamtiv mecarbil. | Inpatient/Outpatient |
| Sodium-glucose cotransporter-1/2 inhibitors | * No
* Dapagliflozin
* Canagliflozin
* Empagliflozin
* Ertugliflozin
* Sotagliflozin
* Unknown
 | Enter whether the patient was discharged on sodium-glucose cotransporter-1/2 inhibitors.Note: For combination drugs, enter details about both drug classes. | Inpatient/Outpatient |
| Sodium-glucose cotransporter-1/2 inhibitors, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the sodium-glucose cotransporter-1/2 inhibitors at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Oral/subcutaneous hypoglycaemic agents | Multiple choice: * No
* Insulin
* Metformin
* Glucagon-like peptide-1 (GLP-1) analogue
* Dipeptidyl peptidase-4 (DPP-4) inhibitor
* Sulfonylurea
* Repaglinide
* Thiazolidinedione
* Alpha-glucosidase inhibitor
* Other
* Unknown
 | Enter whether the patient was discharged on oral or subcutaneous antidiabetic medications. More than one option can be selected.Note: Sodium-glucose cotransporter-2 inhibitors are entered separately. | Inpatient/Outpatient |
| Aspirin | * No
* Yes
* Unknown
 | Enter whether the patient was discharged on aspirin. | Inpatient/Outpatient |
| P2Y12 inhibitors | * No
* Clopidogrel
* Prasugrel
* Ticagrelor
* Other
* Unknown
 | Enter whether the patient was discharged on P2Y12 inhibitors. | Inpatient/Outpatient |
| Oral anticoagulants | * No
* Vitamin K antagonist
* Dabigatran
* Rivaroxaban
* Apixaban
* Edoxaban
* Other
* Unknown
 | Enter whether the patient was discharged on oral anticoagulants. Vitamin K antagonists include warfarin. | Inpatient/Outpatient |
| Lipid lowering treatment | Multiple choice: * No
* Statins
* Ezetimibe
* Fibrates
* PCSK9 inhibitors
* Other
* Unknown
 | Enter whether the patient was discharged on lipid lowering treatment. More than one option can be selected. | Inpatient/Outpatient |
| Nitrates | Multiple choice: * No
* Short-acting nitrates
* Long-acting nitrates
* Unknown
 | Enter whether the patient was discharged on nitrates.  | Inpatient/Outpatient |
| Calcium channel blockers | * No
* Diltiazem
* Verapamil
* Amlodipine
* Nifedipine
* Lercanidipine
* Other
* Unknown
 | Enter whether the patient was discharged on calcium channel blockers. | Inpatient/Outpatient |

**Table S1.** Level 2 variables with their permissible values and definitions.

|  |  |  |  |
| --- | --- | --- | --- |
| **Data field** | **Permissible values**  | **Definition** | **Registry** |
| **Demographics** |
| Surname(s) | String | Enter the patient’s surname(s). | Inpatient/Outpatient |
| Gender | * Female
* Male
* Non-binary
 | Enter the patient’s current self-identified gender.Note: Non-binary includes all other gender identities that are not exclusively masculine or feminine. | Inpatient/Outpatient |
| Ethnicity | * White
* Black
* Asian
* Hispanic or Latino
* Arab
* Mixed
* Not stated
* Other
* Unknown
 | Enter the patient's ethnic group as perceived by the patient.Note: White includes white European or any other white background. Black includes African, African American, Caribbean, or any other black background. Asian includes Chinese, Indian, Pakistani, Bangladeshi, or any other Asian background. Hispanic or Latino includes Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin. Arab includes people who self-identify as Arabs, e.g. Middle Eastern or North African. Mixed includes White and Black Caribbean, White and Black African, White and Asian, or any other mixed background. Other includes any other ethnic group not listed above. Not stated includes patients who cannot or do not prefer to state their ethnic background. | Inpatient/Outpatient |
| Postal code | String | Enter the postal code for the patient’s current residence. | Inpatient/Outpatient |
| **Patient characteristics and comorbidities** |
| Alcohol intake  | None≤2 units per week 3-13 units per week ≥14 units per week Unknown | Enter the patient’s usual weekly alcohol consumption. Note: An alcohol unit is equal to 8.0 g of pure alcohol. Generally, this amount of pure alcohol is found in 25 mL of spirit, half a pint (≈ 280 mL) of beer, whereas a 175 mL glass of wine contains 2 units of alcohol. | Inpatient/Outpatient |
| Frailty  | * Very fit
* Well
* Managing well
* Slightly limited
* Mildly frail
* Moderately frail
* Severely frail
* Very severely frail
* Terminally ill
* Unknown
 | Enter the patient’s frailty status prior to current hospital admission.* Very fit is defined as a patient who is robust, active, energetic and motivated. These patients commonly exercise regularly. They are among the fittest for their age.
* Well is defined as a patient who has no active disease symptoms but is less fit than patients who are very fit. Often, they exercise or are very active occasionally, e.g. seasonally.
* Managing well is defined as a patient whose medical problems are well controlled, but who is not regularly active beyond routine walking.
* Slightly limited is defined as a patient who is not dependent on others for daily help, often symptoms limit activities. A common complaint is being “slowed down”, and/or being tired during the day.
* Mildly frail is defined as a patient whose activities are more evidently limited by the disease, and who needs help in high-order activities of daily life (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.
* Moderately frail is defined as a patient who needs help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.
* Severely frail is a patient who is completely dependent on others for personal care, from whatever cause (physical or cognitive). Even so, they appear stable and not at imminent risk of dying (i.e., within approximately 6 months).
* Very severely frail is a patient who is completely dependent on others and approaching the end of life. Typically, they could not recover even from a minor illness.
* Terminally ill is a patient who is approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.21
 | Inpatient/Outpatient |
| Renal dialysis | * No
* Yes
* Unknown
 | Enter whether the patient is on renal dialysis regularly prior to this care encounter.Note: Renal dialysis Includes all form of dialysis, e.g. haemodialysis and peritoneal dialysis.4  | Inpatient/Outpatient |
| Cardiotoxic therapies  | * No
* Yes
* Unknown
 | Enter whether the patient is known to have had received one or more cardiotoxic drugs (regardless of indication) prior to this care encounter.Note: Cardiotoxic drugs are therapies that have direct effects on the heart function and/or structure or those that may accelerate the development of cardiovascular disease. [Zamorano JL, et al. Eur Heart J. 2016; 37(36): 2768–2801] | Inpatient/Outpatient |
| Moderate or severe valvular heart disease  | * No
* Yes
* Unknown
 | Enter whether the patient is known to have an ongoing moderate or severe valvular heart disease prior to this care encounter.Note: This includes any moderate or severe stenosis or regurgitation in any of the heart valves that has not been treated.10  | Inpatient/Outpatient |
| Peripheral arterial disease  | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a diagnosis of peripheral arterial disease (PAD) made by a healthcare professional prior to this care encounter. Note: PAD (other than carotid artery disease) is defined as atherosclerotic peripheral arterial disease in the upper or lower extremities, renal, splenic, mesenteric, and/or abdominal aortic systems. Atherosclerotic peripheral arterial disease can also include claudication, either with exertion or at rest.22 | Inpatient/Outpatient |
| Sleep apnoea | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a diagnosis of sleep apnoea made by a healthcare professional prior to this care encounter.Note: Sleep apnoea is defined as repetitive pauses in breathing during sleep caused by airway occlusion (obstructive sleep apnoea) or altered control of breathing (central sleep apnoea) regardless of treatment strategy.23, 24 | Inpatient/Outpatient |
| Acute/unplanned encounter for heart failure during the last 12 months | * No
* Yes
* Unknown
 | Enter whether the patient is known to have a prior urgent/ unscheduled hospitalisation or clinic visit or a presentation to emergency department with heart failure during the last 12 months excluding this care encounter.  | Inpatient/Outpatient |
| **Presentation details** |
| Team responsible for care | * Cardiology
* Internal medicine
* Geriatrics
* Other
* Unknown
 | Enter the specialty of the primary medical team in charge of the patient during this episode of care. | Inpatient/Outpatient |
| Diastolic blood pressure (mmHg) | Numeric | Unknown | Enter the patient's first recorded diastolic blood pressure (in millimetres of mercury) at the time of hospital admission or outpatient visit for this episode of care.Note: Diastolic blood pressure should be the first pressure recorded by a healthcare professional, including primary care physician, ambulance personnel or emergency department staff. | Inpatient/Outpatient |
| Oxygen saturation | Numeric | Unknown | Enter the patient’s first recorded oxygen saturation (in percentage) at the time of hospital admission or outpatient visit for this episode of care. | Inpatient/Outpatient |
| Respiratory rate | Numeric | Unknown | Enter the patient’s first recorded respiratory rate (in breaths per minute) at the time of hospital admission or outpatient visit for this episode of care.  | Inpatient/Outpatient |
| **Prescribed medication prior to encounter** |
| Angiotensin-converting enzyme inhibitors at pre-encounter | * No
* Captopril
* Enalapril
* Lisinopril
* Ramipril
* Trandolapril
* Perindopril
* Fosinopril
* Quinapril
* Other
* Unknown
 | Enter whether the patient was regularly taking angiotensin-converting enzyme (ACE) inhibitors prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug classes. | Inpatient/Outpatient |
| Angiotensin II receptor blockers at pre-encounter | * No
* Losartan
* Valsartan
* Candesartan
* Irbesartan
* Other
* Unknown
 | Enter whether the patient regularly was taking angiotensin II receptor blockers (ARB) prior to hospital admission or outpatient visit. For combination drugs (except angiotensin receptor-neprilysin inhibitors), enter details about both drug classes. | Inpatient/Outpatient |
| Angiotensin receptor-neprilysin inhibitors at pre-encounter | * No
* Sacubitril/Valsartan
* Unknown
 | Enter whether the patient regularly was taking angiotensin II receptor blockers (ARNI) prior to hospital admission. | Inpatient/Outpatient |
| Mineralocorticoid receptor antagonists at pre-encounter | * No
* Spironolactone
* Eplerenone
* Other
* Unknown
 | Enter whether the patient was regularly taking mineralocorticoid receptor antagonists (MRA) prior to hospital admission. | Inpatient/Outpatient |
| Beta blockers at pre-encounter | * No
* Metoprolol succinate
* Bisoprolol
* Carvedilol
* Nebivolol
* Other
* Unknown
 | Enter whether the patient was regularly taking beta blockers prior to hospital admission. | Inpatient/Outpatient |
| Ivabradine at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking ivabradine prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Digoxin at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking digoxin prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Loop diuretics at pre-encounter | Multiple choice* No
* Furosemide
* Bumetanide
* Torasemide
* Other
* Unknown
 | Enter whether the patient was regularly taking loop diuretics prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug classes. More than one option can be selected. | Inpatient/Outpatient |
| Non-loop diuretics at pre-encounter | Multiple choice * No
* Bendroflumethiazide
* Hydrochlorothiazide
* Metolazone
* lndapamide
* Other
* Unknown
 | Enter whether the patient was regularly taking thiazide diuretics prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug classes. More than one option can be selected. | Inpatient/Outpatient |
| Vericiguat at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking vericiguat prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug classes.  | Inpatient/Outpatient |
| Omecamtiv mecarbil at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking omecamtiv mecarbil prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug classes.  | Inpatient/Outpatient |
| Sodium-glucose cotransporter-1/2 inhibitors (glifozins) at pre-encounter | * No
* Dapagliflozin
* Canagliflozin
* Empagliflozin
* Ertugliflozin
* Sotagliflozin
* Unknown
 | Enter whether the patient regularly was taking sodium-glucose cotransporter-2 (SGLT2) inhibitors prior to hospital admission or outpatient visit. For combination drugs, enter details about both drug o classes. | Inpatient/Outpatient |
| Oral/subcutaneous hypoglycaemic agents pre-encounter at pre-encounter | Multiple choice: * No
* Insulin
* Metformin
* Glucagon-like peptide-1 (GLP-1) analogue
* Dipeptidyl peptidase-4 (DPP-4) inhibitor
* Sulfonylurea
* Repaglinide
* Thiazolidinedione
* Alpha-glucosidase inhibitor
* Other
* Unknown
 | Enter whether the patient was regularly taking oral or subcutaneous antidiabetic medications prior to hospital admission or outpatient visit. More than one option can be selected. Note: Sodium-glucose cotransporter-2 inhibitors are entered separately. | Inpatient/Outpatient |
| Aspirin at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking aspirin prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| P2Y12 inhibitors at pre-encounter | * No
* Clopidogrel
* Prasugrel
* Ticagrelor
* Other
* Unknown
 | Enter whether the patient was regularly taking oral antiplatelet agents (other than aspirin) prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Oral anticoagulants at pre-encounter | * No
* Vitamin K antagonist
* Dabigatran
* Rivaroxaban
* Apixaban
* Edoxaban
* Other
* Unknown
 | Enter whether the patient was regularly taking oral anticoagulants prior to hospital admission or outpatient visit. Vitamin K antagonists include warfarin. | Inpatient/Outpatient |
| Lipid lowering treatment at pre-encounter | Multiple choice: * No
* Statins
* Ezetimibe
* Fibrates
* PCSK9 inhibitors
* Other
* Unknown
 | Enter whether the patient was regularly taking any lipid lowering treatment prior to hospital admission or outpatient visit. More than one option can be selected. | Inpatient/Outpatient |
| Nitrates at pre-encounter | Multiple choice: * No
* Short-acting nitrates
* Long-acting nitrates
* Unknown
 | Enter whether the patient was regularly taking short- or long-acting nitrates prior to hospital admission or outpatient visit. More than one option can be selected. | Inpatient/Outpatient |
| Calcium channel blockers at pre-encounter | * No
* Diltiazem
* Verapamil
* Amlodipine
* Nifedipine
* Lercanidipine
* Other
* Unknown
 | Enter whether the patient was regularly taking calcium channel blockers prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Tolvaptan (vasopressin receptor 2 antagonist) at pre-encounter | * No
* Yes
* Unknown
 | Enter whether the patient was regularly taking tolvapatan prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Tolvaptan, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of tolvaptan prior to hospital admission or outpatient visit (in mg). | Inpatient/Outpatient |
| Potassium binders at pre-encounter | * Sodium polystyrene sulfonate
* Calcium polystyrene sulfonate
* Patiromer sorbitex calcium
* Sodium zirconium cyclosilicate
* Other
* Unknown
 | Enter whether the patient was regularly taking Potassium lowering therapy prior to hospital admission or outpatient visit. | Inpatient/Outpatient |
| Potassium binders, daily dosage | Numeric | Unknown | Enter the total daily dose of the potassium binders prior to hospital admission or outpatient visit (in mg). | Inpatient/Outpatient |
| **Health-related quality-of-life** |
| Quality-of-life, result | Numeric | Unknown | Enter the result of the patient’s health-related quality of life according to the measurement tool.  | Inpatient/Outpatient |
| **Tests** |
| Urea (mmol/L) | Numeric | Unknown | Enter the first urea value recorded during the hospital stay. For outpatient enter the last recorded measurement within 1 month before the visit (in mmol/L). |  |
| Albumin (g/L) | Numeric | Unknown | Enter the first albumin value recorded during the hospital stay. For outpatient enter the last recorded measurement within 1 month before the visit (in g/L). |  |
| Ferritin (µg/L) | Numeric | Unknown | Enter the first ferritin value recorded during the hospital stay. For outpatient enter the last recorded measurement within 1 month before the visit (in µg/L). | Inpatient/Outpatient |
| C-reactive protein (mg/L) | Numeric | Unknown | Enter the first C-reactive protein (CRP) value recorded during the hospital stay. For outpatients, enter the value on the visit day or the most recent value within the previous month (in mg/L). | Inpatient/Outpatient |
| Imaging assessment of the myocardium | * Not performed
* Echocardiography
* Cardiac MRI
* Other
* Unknown
 | Enter the method used to assess the patient’s left ventricular ejection fraction during the most recent evaluation. | Inpatient/Outpatient |
| Left ventricular ejection fraction, assessment, date  | Date | Unknown | Enter the date of the most recent assessment of the patient’s left ventricular ejection fraction.  | Inpatient/Outpatient |
| **In-hospital management** |
| Oxygen therapy  | * No
* Yes
* Unknown
 | Enter whether the patient was commenced on oxygen therapy during this hospital stay.  | Inpatient  |
| Intravenous vasodilators | * No
* Nitroglycerin
* Nitroprusside
* Isosorbide dinitrate
* Other
* Unknown
 | Enter whether intravenous vasodilators were administered during this hospital stay. | Inpatient  |
| Mechanical circulatory support | Multiple choice: * No
* Intra-aortic balloon pump (IABP)
* Cardiopulmonary bypass
* Impella
* Autopulse
* Extracorporeal membrane oxygenation (ECMO)
* Other
* Unknown
 | Enter whether any of the following mechanical circulatory support devices were used during this hospital stay. More than one options can be selected. | Inpatient  |
| Inotropic/vasopressor agents, iv | * No
* Dobutamine
* Dopamine
* Milrinone
* Enoximone
* Levosimendan
* Norepinephrine
* Tolvaptan
* Other
* Unknown
 | Enter whether any of the following intravenous inotropic agents were administered during this hospital stay. | Inpatient  |
| Non-invasive ventilatory support | * No
* Yes
* Unknown
 | Enter whether any of the following non-invasive ventilatory supports (CPAP, BiPAP) were used during this hospital stay.Note: Patients who use their own Continuous Positive Airway Pressure (CPAP) or Biphasic Positive Airway Pressure (BiPAP) machine for sleep apnoea during the current episode of care should not be recorded as receiving non-invasive ventilation.  | Inpatient  |
| Mechanical ventilatory support | * No
* Yes
* Unknown
 | Enter whether invasive mechanical ventilation was used during this hospital stay. | Inpatient  |
| Renal dialysis/ultrafiltration, in-hospital | Multiple choice: * No
* Renal dialysis
* Ultrafiltration
* Unknown
 | Enter whether renal dialysis or ultrafiltration (haemofiltration) was used during this hospital stay. Renal dialysis includes haemodialysis or peritoneal dialysis. | Inpatient  |
| **Discharge details**  |
| NYHA class at discharge | * NYHA class I
* NYHA class II
* NYHA class III
* NYHA class IV
* Unknown
 | Enter the last recorded New York Heart Association (NYHA) class prior to hospital discharge for this care encounter.Note: NYHA class I is defined as no limitations of physical activity. Ordinary physical activity does not cause undue fatigue, palpitations, or dyspnoea. NYHA class II is defined as slight limitation of physical activity. The patient is comfortable at rest. Ordinary physical activity results in fatigue, palpitations, or dyspnoea. NYHA class III is defined as marked limitation of physical activity. The patient is comfortable at rest. Less than ordinary activity causes fatigue, palpitations, or dyspnoea. NYHA class IV is defined as inability to carry on any physical activity without discomfort. Heart failure symptoms are present even at rest or with minimal exertion. | Inpatient  |
| Killip class at discharge | * Killip class I
* Killip class II
* Killip class III
* Killip class IV
* Unknown
 | Enter the last recorded Killip class prior to hospital discharge for this care encounter.Note: Killip class I is defined as patients with no clinical signs of heart failure. Killip class II is defined as patients with rales or crackles in the lungs, S3 gallop, or elevated jugular venous pressure. Killip class III is defined as patients with pulmonary oedema. Killip class IV is defined as patients in cardiogenic shock. | Inpatient  |
| Referrals for heart transplant | * No
* Yes
* Unknown
 | Enter whether the patient has been referred for heart transplant during the current care encounter.  | Inpatient/Outpatient  |
| Referral for interventions  | Multiple choice: * No
* Transcatheter aortic valve implantation
* MitraClip
* Transcatheter tricuspid valve repair
* Interatrial shunt device
* Catheter ablation
* Percutaneous coronary intervention
* Coronary artery bypass graft surgery
* Open heart valve surgery
* Other
* Unknown
 | Enter whether the patient was referred for any of the following interventions during this care encounter. More than one option can be selected.Note: Transcatheter aortic valve implantation is defined as transcatheter implantation of aortic valve to treat aortic stenosis. MitraClip is a device used to reduce mitral valve regurgitation by attaching the anterior and the posterior mitral valve leaflets by a clip. Transcatheter tricuspid valve repair is a percutaneous intervention on the tricuspid valve using a device to reduce tricuspid valve regurgitation. Interatrial shunt device is defined as the creation of a left-to-right interatrial shunt to decrease the pulmonary capillary wedge and left atrial pressure. Catheter ablation is an invasive procedure performed to treat a faulty electrical pathway within segments of the heart to terminate or prevent cardiac arrhythmias. Percutaneous coronary intervention is the placement of an angioplasty guidewire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or a graft for the purpose of mechanical coronary revascularisation. The assessment of coronary lesion severity by fluoroscopy, intracoronary imaging (e.g. intravascular ultrasonography) or physiology (e.g. fractional flow reserve) is not considered a PCI procedure. Coronary artery bypass graft surgery is a procedure that involves sternotomy to bypass diseased segment(s) of the coronary tree using blood vessels derived other parts of the body and connected to the aorta. Open heart valve surgery is a surgical intervention on a heart valve that involves sternotomy.10-12  | Inpatient/Outpatient |
| **Discharge medications/Medications post-encounter** |
| Angiotensin-converting enzyme inhibitors, why not used or at target dosage (mg) | * Still being added/titrated
* Hypotension
* Kidney disease
* Elevated potassium levels
* Other
* Unknown
 | Enter the reason because of which angiotensin-converting enzyme (ACE) inhibitors were not used or up-titrated during the current episode of care.  | Inpatient/Outpatient |
| Angiotensin II receptor blockers, why not used or at target dosage (mg) | * Still being added/titrated
* Hypotension
* Kidney disease
* Elevated potassium levels
* Other
* Unknown
 | Enter the reason because of which angiotensin II receptor blockers (ARB) were not used or up titrated during the current episode of care. | Inpatient/Outpatient |
| Angiotensin receptor-neprilysin inhibitors, why not used or at target dosage (mg) | * Still being added/titrated
* Hypotension
* Kidney disease
* Elevated potassium levels
* Other
* Unknown
 | Enter the reason because of which angiotensin receptor-neprilysin inhibitor (ARNI) was not used or up-titrated during the current episode of care. | Inpatient/Outpatient |
| Mineralocorticoid receptor antagonists, why not used or at target dosage (mg) | * Still being added/titrated
* Hypotension
* Kidney disease
* Elevated potassium levels
* Other
* Unknown
 | Enter the reason because of which mineralocorticoid receptor antagonists (MRA) were not used or up titrated during the current episode of care. | Inpatient/Outpatient |
| Beta blockers, why not used or at target dosage (mg) | * Still being added/titrated
* Hypotension
* Bradycardia/high-grade atrioventricular block
* Severe asthma
* Other
* Unknown
 | Enter the reason because of which beta blockers were not used or up titrated during the current episode of care. | Inpatient/Outpatient |
| Digitalis, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the digitalis at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Loop diuretics, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the loop diuretics at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Non-loop diuretics, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the non-loop diuretics at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Vericiguat, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of vericiguat at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Omecamtiv mecarbil, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of omecamtiv mecarbil at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Sodium-glucose cotransporter-1/2 inhibitors, why not used  | * No indication
* Hypotension
* Severe kidney disease
* History of ketoacidosis
* Other
* Unknown
 | Enter the reason because of which Sodium-glucose cotransporter-1/2 inhibitors were not used during the current episode of care. | Inpatient/Outpatient |
| Oral/subcutaneous antidiabetics, daily (or weekly when applicable) dosage (mg/units) | Numeric | Unknown | Enter the total daily dose (or weekly dose when applicable) of the oral or subcutaneous antidiabetic medications at the time of hospital discharge (in mg or units). | Inpatient/Outpatient |
| Aspirin, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of aspirin at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| P2Y12 inhibitors, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of P2Y12 inhibitors at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Oral anticoagulants, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of oral anticoagulants at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Lipid lowering treatment, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the lipid lowering drugs at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Nitrates, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of nitrates at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Calcium channel blockers, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the calcium channel blockers at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Tolvaptan (vasopressin receptor 2 antagonist)  | * No
* Yes
* Unknown
 | Enter whether the patient was discharged on tolvapatan. | Inpatient/Outpatient |
| Tolvaptan, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of tolvaptan at the time of hospital discharge (in mg). | Inpatient/Outpatient |
| Potassium binders | * Sodium polystyrene sulfonate
* Calcium polystyrene sulfonate
* Patiromer sorbitex calcium
* Sodium zirconium cyclosilicate
* Other
* Unknown
 | Enter whether the patient was discharged on potassium binders. | Inpatient/Outpatient |
| Potassium binders, daily dosage (mg) | Numeric | Unknown | Enter the total daily dose of the potassium binders at the time of hospital discharge (in mg). | Inpatient/Outpatient |

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