

Supplementary material 1 Variables of the heart failure registry

NOTE: Based on the dynamic data dictionary version 22.1.4 September 9, 2022. Definitions of variables and included variables are subject to change, since data dictionary depends on the current HF guidelines and is compiled by a committee consisting of delegated cardiologists from Dutch hospitals.

	Variables	Answer possibilities	Baseline (T0)	6 months (T1)	12 months (T2)
Identifying variables	Diagnosis number *	Unique number set up by the hospital	X		
	Date of diagnosis *	Date (DD-MM-YYYY)	X		
	Patient number*	Identification number in the hospital	X		
	Maiden name*	Name	X		
	Surname*	Name	X		
	Date of birth [§]	Date (DD-MM-YYYY)	X		
	Sex	Male Female	X		
	Zip code*	1000 AA – 9999 ZZ= the Netherlands 0000= Abroad -1= Unknown	X		
Diagnostic variables	Setting of inclusion	10= Outpatient clinic 20= Hospital, novo patient 30= Hospital, acute/chronic HF patient -1 = Unknown	X		
	Previous HF diagnosis	0= No 1= Yes -1= Unknown	X		
	Date of previous diagnosis (if applicable)	Date (DD-MM-YYYY)	X		
	Location diagnosis HF	10= Not earlier diagnosed with HF 10= Primary care 20= Secondary care 30= Tertiary care -1= Unknown	X		
	Type of HF	10= HFrEF 20= HFmrEF 30= HFpEF -1= Unknown	X		
	Etiology HFrEF	0= No HFrEF 10= Ischemic cardiomyopathy 20= Non-ischemic, hypertensive cardiomyopathy 50= Non-ischemic, arrhythmia/tachycardia mediated 60= Non-ischemic, hypertrophic cardiomyopathy 70= Non-ischemic, dilated cardiomyopathy (eci) 80= Non-ischemic, inflammation/infection (i.e., myocarditis) 90= Nonischemic, restrictive cardiomyopathy and/or accumulation 111= Nonischemic, familiar cq. genetic cardiomyopathy with proven DNA mutation	X		

		120= Non-ischemic, pericardial 135= Non-ischemic, toxic cardiomyopathy due to alcohol/drugs 136= Non-ischemic, toxic cardiomyopathy due to chemotherapy/radiation 139= Non-ischemic, toxic cardiomyopathy due to other 140= Non-ischemic, eci or (as yet) undetermined 900= Other (i.e., valve disease, metabolic, peripartum) -1= Unknown			
	Etiology HFpEF	0= No HFpEF 10= Secondary HFpEF 20= Isolated hypertensive heart disease 30= Genetic HCM 40= Amyloidosis 50= Sarcoidosis 60= Hemochromatosis 70= Immune/inflammatory 80= Aortic valve stenosis 90= Pericardial diseases 900= Other -1= Unknown	X		
Patient characteristics	Identifying variables				
	Follow-up moment	0 = T0 6 = T1 12 = T2 24 = T3 36 = T4 48 = T5	X	X	X
	Comorbidities				
	Hypertension	0= No 1= Yes -1= Unknown	X	X	X
	Cardiovascular accident	0= No 1= Yes -1= Unknown	X	X	X
	Extracardiac arterial vascular pathology	0= No 1= Yes -1= Unknown	X	X	X
	Chronic respiratory disease	0= No 1= Yes -1= Unknown	X	X	X
	Obstructive Sleep Apnea Syndrome	0= No 1= Yes -1= Unknown	X	X	X
	Diabetes Mellitus	0= No 1= Diabetes, treatment unknown 2= Diabetes, no treatment 10= Diabetes, diet 20= Diabetes, oral medication 30= Diabetes, insulin 90= Diabetes, other -1= Unknown	X	X	X
Thyroid disorder	0= No 10= Yes, hypothyroidism 20= Yes, hyperthyroidism	X	X	X	

		-1= Unknown			
	Malignancy	0= No 10= Yes, in the past 20= Yes, currently -1= Unknown	X	X	X
Measurements					
	Length	Measurement in centimeters	X	X	X
	Weight	Measurement in kilogram	X	X	X
	Systolic blood pressure	Measurement in mmHg	X	X	X
	Diastolic blood pressure	Measurement in mmHg	X	X	X
	Heart rhythm	10= Sinus rhythm 20= Atrium fibrillation 30= Atrial pacing 90= Other -1= Unknown	X	X	X
	Heartrate	Measurement in beats per minute	X	X	X
	Atrial heart rhythm disorder	0= No 1= Yes -1= Unknown	X	X	X
	Left bundle branch block	0= No 10= Yes, own heart's electrical conduction 20= Yes, pacing rhythm -1= Unknown	X	X	X
	QRS complex duration	Measurement in milliseconds	X	X	X
Left ventricle ejection fraction, NYHA classification and laboratory parameters					
	Left ventricle ejection fraction	Measurement in percentages	X	X	X
	NYHA class	1= Class I 2= Class II 3= Class III 4= Class IV -1= Unknown	X	X	X
	NT-proBNP	1 t/m 8000= Value in pmol/l 0= No NT-proBNP measurement -1= Unknown	X	X	X
	Date measurement NT-proBNP ^s	Date (DD-MM-YYYY)	X	X	X
	Serum creatinine	Value in µmol/l	X	X	X
	Iron deficiency	1= No 2= Yes, absolute ferritin < 100 µg/L 3= Yes, relative ferritin 100-300 µg/L with transferrin saturation < 20% -1= Unknown	X	X	X
	Anemia	0= No 1= Yes -1= Unknown	X	X	X
Medication with target dose					
Medication	Type ACE inhibitor	0= No ACE inhibitor prescribed at Tn 10= Captopril (td in ESC 2021 = 150 mg) 20= Enalapril (td in ESC 2021= 20-40 mg) 3=- Lisinopril (td in ESC 2021 = 20-35 mg) 40= Ramipril (td in ESC 2021 = 10 mg) 50= Perindopril (td in ESC 2021 = 8 mg)	(X)	X	X

	60= Quinapril (td in ESC 2021 = 20 mg) 70= Fosinopril (td in ESC 2021 = 20-40 mg) 90= Other -1= Unknown			
Target dose ACE inhibitor	0= No ACE inhibitor prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
Type ARB	0= No ARB prescribed at Tn 10= Candesartan (td in ESC 2021 = 32 mg) 20= Losartan (td in ESC 2021 = 150 mg) 30= Valsartan (td in ESC 2021 = 320 mg) 40= Telmisartan (td in ESC 2021 = 80 mg) 50= Irbesartan (td in ESC 2021 = 300 mg) 90= Other -1= Unknown	(X)	X	X
Target dose ARB	0= No ARB prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
ARNI	0= No 1= Yes (td in ESC 2021 = 194-206 mg) -1= Unknown	(X)	X	X
Target dose ARNI	0= No ARNI prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
Type beta-blocker	0 = No beta blocker prescribed at Tn 10= Bisoprolol (td in ESC 2021 = 10 mg) 20= Metoprolol (td in ESC 2021 = 200 mg) 30= Carvedilol (td in ESC 2021 = 50 mg)	(X)	X	X

	40= Nebivolol (td in ESC 2021 = 10 mg) 50= Atenolol (td in ESC 2021 = 100 mg) 60= Pindolol (td in ESC 2021 = 20 mg) 70= Propranolol (td in ESC 2021 = 160 mg) 90= Other -1= Unknown			
Target dose beta-blocker	0= No beta blocker prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
Type MRA	0= No MRA prescribed at Tn 10= Eplerenone (td in ESC 2021= 50 mg) 20= Spironolactone (td in ESC 2021= 50 mg) 90= Other -1= Unknown	(X)	X	X
Target dose MRA	0= No MRA prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
Type SGLT2 inhibitor	0= No SGLT2 inhibitor prescribed at Tn 10= Canagliflozin (td in ESC 2021 = 10 mg) 20= Dapagliflozin (td in ESC 2021 = 10 mg) 30= Empagliflozin (td in ESC 2021 = 10 mg) 90= Other -1= Unknown	(X)	X	X
Target dose SGLT2 inhibitor	0= No SGLT2 inhibitor prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
Ivabradine	0= No 1= Yes	(X)	X	X

		-1= Unknown			
	Target dose Ivabradine	0= No ivabradine prescribed at Tn 1= No, target dose in ESC 2021 not reached due to contraindication or otherwise 2= No, target dose in ESC 2021 not reached due to titration phase 10= Yes, target dose in ESC 2021 reached or maximally tolerable for this patient -1= Unknown	(X)	X	X
	Additional medication				
	Diuretic	0= No 1= Yes (target dose in ESC 2021 = 15mg) -1= Unknown	(X)	X	X
	Vericiguat	0= No 1= Yes -1= Unknown	(X)	X	X
	Digoxin	0= No 1= Yes -1= Unknown	(X)	X	X
	Amiodarone	0= No 1= Yes -1= Unknown	(X)	X	X
	Sotalol	0= No 1= Yes -1= Unknown	(X)	X	X
	Hydralazine / Isosorbide dinitrate	0= No 1= Yes -1= Unknown	(X)	X	X
	Cardiac intervention and implantable				
Outcome variables	Pacemaker – VVI	0= No 1= Yes -1= Unknown	(X)	X	X
	Pacemaker – VVI date [§]	Date (DD-MM-YYYY)	(X)	X	X
	Pacemaker – DDD	0= No 1= Yes -1= Unknown	(X)	X	X
	Pacemaker – DDD date [§]	Date (DD-MM-YYYY)	(X)	X	X
	CRT-P	0= No 1= Yes -1= Unknown	(X)	X	X
	CRT-P date [§]	Date (DD-MM-YYYY)	(X)	X	X
	CRT-D	0= No 1= No, because of medical condition 2= No, because of patients' wish 10= Yes -1= Unknown	(X)	X	X
	CRT-D date [§]	Date (DD-MM-YYYY)	(X)	X	X
	ICD – VVI	0= No 1= No, because of medical condition 2= No, because of patients' wish 10= Yes -1= Unknown	(X)	X	X
	ICD – VVI date [§]	Date (DD-MM-YYYY)	(X)	X	X
ICD – DDD	0= No 1= No, because of medical condition 2= No, because of patients' wish	(X)	X	X	

	10= Yes -1= Unknown			
ICD – DDD date [§]	Date (DD-MM-YYYY)	(X)	X	X
PCI	0= No 1= Yes -1= Unknown	(X)	X	X
PCI date [§]	Date (DD-MM-YYYY)	(X)	X	X
CABG	0= No 1= Yes -1= Unknown	(X)	X	X
CABG date [§]	Date (DD-MM-YYYY)	(X)	X	X
LVAD	0= No 1= Yes -1= Unknown	(X)	X	X
LVAD date [§]	Date (DD-MM-YYYY)	(X)	X	X
Heart transplantation	0= No 1= Yes -1= Unknown	(X)	X	X
Heart transplantation date [§]	Date (DD-MM-YYYY)	(X)	X	X
Heart revalidation	0= No 1= Yes -1= Unknown	(X)	X	X
Telemonitoring	0= No telemonitoring 10= Telemonitoring by telephone 20= Telemonitoring, non-invasive based on traditional parameters (e.g., blood pressure, ECG) 30= Telemonitoring, using ICD based on HF parameters 40= Telemonitoring, invasive by sensors in the blood stream or heart -1= Unknown	(X)	X	X
Patient status and quality of life				
Mortality	0= Alive 1= Deceased -1= Unknown		X	X
Date mortality [§]	Date (DD-MM-YYYY)		X	X
Number of hospitalizations	Number		X	X
Date hospitalization [§]	Date (DD-MM-YYYY)		X	X
Number of hospitalization days	Number		X	X
Location follow-up	0= No follow-up, because of mortality 10= Patient stays in secondary care, outpatient HF clinic 20= Patient stays in tertiary care, outpatient HF clinic 30= Patient transferred to primary care 40= Patient transferred to the cardiology outpatient clinic 90= Other -1= Unknown		X	X
Type quality of life questionnaire	0= Not measured 10= SF12-2 20= SF36-2 30= SF36-1 -1= Unknown	X	X	X
Quality of life	Coding depends on questionnaire	X	X	X
*Variables are collected in the Heart failure registry, but the data is not distributed and available for research.				

§All variables which consist of a date will be transformed to number of days since diagnosed with HF. The actual date is not available in research.

HF: Heart Failure; HFrEF: Heart Failure with reduced Ejection Fraction; HFmrEF: Heart Failure with mildly reduced Ejection Fraction; HFpEF: Heart failure with preserved Ejection Fraction; NYHA: New York Heart Association; eci: e causa ignota (unknown cause); NT-proBNP: N-Terminal pro B-type Natriuretic Peptide; ACE: Angiotensin Converting Enzyme; td: target dose; ARB: Angiotensin Receptor Blocker; ARNI: Angiotensin Receptor-Neprilysin Inhibitor; MRA: Mineralocorticoid Receptor Antagonists; SGLT2: Sodium-glucose co-transporter-2; VVI: Ventricular pacing; DDD: dual-chamber antibradycardia pacing; CRT-P: Cardiac Resynchronization Therapy with a Pacemaker; CRT-D: Cardiac Resynchronization Therapy with a pacemaker and an ICD; ICD: Implantable Cardioverter-Defibrillator; PCI: Percutaneous Coronary Intervention; CABG: Coronary Artery Bypass Graft; LVAD: Left Ventricular Assist Device; ECG: Electro Cardio Gram; SF12/SF36: Short Form Health Survey with 12 questions or 36 questions.