

Supplementary Table 1. Baseline characteristics of the included studies.

N	Author	Country	Study design	Total participants (n)	Study population	Ischemic origin (%)	ICD implantation criteria	Age (Mean±SD) (years)	Male (%)	NT-pro BNP levels (mean/median) (pg/mL)	NT-pro BNP reference value (pg/mL)	LVEF (Mean±SD) (%)	Outcome(s) and event rate(s)	Adjusted variable(s)	Follow-up length (years)	NO S
1	Bae (2020) ¹¹	Korea	Retrospective observational study	167	Cardiomyopathy patients (ischemic or non-ischemic origin) patients who received ICD	42.6	LVEF<30% or <35% with heart failure symptom of NYHA functional class II, III	62.4±11	72.5	4519	1584.9	22.9±5.6	All-cause mortality (18%)	Age, BMI, NYHA functional class, diabetes mellitus, eGFR, LVEDD, LVEF	2.6	9

2	Battipaglia (2010) ¹³	Italy	Prospective observational study	42	Dilated cardiomyopathy patients (ischemic or idiopathic origin) patients who received ICD	72.7	LVEF<40 %	67.3±3.5	88.1	1588.6	N/A	35.0±9.9	Appropriate ICD shock (26.2%)	Not adjusted	2.8	9
3	Butt (2022) ¹²	United States	Retrospective observational study	1116	Cardiomyopathy patients (non-ischemic origin) who received ICD	0	LVEF≤35 % with heart failure symptom of NYHA functional class II, III	63±4.6	72.5	2241	1177	21.3±1.2	All-cause mortality (34.9%)	Age, sex, CRT implantation (pre-existing or planned), duration of HF, cause of HF, NYHA functional	9.5	9

													class, SBP, eGFR, LVEF, BMI, history of HF hospitalization, diabetes mellitus, AF, stroke			
4	Cheng (2014) ¹⁴	United States	Prospective observational study	1189	Heart failure patients who received ICD	54	LVEF≤35% with heart failure symptom of NYHA functional class II, III	60.6±12.7	72.9	N/A	Quartile 1: ≤1700 Quartile 2: 1800-2600 Quartile 3:	22.3±7.4	All-cause mortality (28.8%) Appropriate ICD shock (11.5%)	Age, sex, race, smoking status, BMI, LVEF, AF, hypertension, diabetes mellitus,	4	9

											2700-4100 Quartile 4: >4100			CKD, device type (ICD or CRT-D)		
5	Deng (2022) ¹⁵	China	Retrospective observational study	500	Dilated cardiomyopathy patients (ischemic or non-ischemic origin) patients who received ICD	53.8	LVEF≤35 %	60.2±12	83	854.2	Quartile 1: ≤ 401.9 Quartile 2: 402- 854.2 Quartile 3: 854.3- 1817.7 Quartile 4: ≥1817.8	31.3±8.1	All- cause mortality (21.2%) Appropriate ICD shock (17.8%)	Age, cause of HF, BMI, smoking status, NYHA functional class, LVEDD, LVEF, AF, diabetes mellitus, hemoglobin, creatinine, BUN,	4.1	9

													diuretic, digitalis usage			
6	Levine (2014) ¹⁶	United States	Retrospec tive observati onal study	161	Heart failure patients who received ICD	65	LVEF<30 % with heart failure symptom of NYHA functional class II, III	66.4±3.9	78. 3	6947.1	N/A	25.2±3.2	All- cause mortality (30.2%) Appropri ate ICD shock (23.5%)	Age, sex, LVEF, NYHA functional class, history of CAD, BUN, eGFR, history of AF, amiodaron e usage	1.7	8
7	Mordi (2014) ¹⁷	United Kingdo m	Prospecti ve observati onal study	157	Dilated cardiomyop athy patients (ischemic or non-	38.9	LVEF≤35 % with heart failure symptom	51.9±12. 3	78. 4	2860.5	N/A	26.2±12. 8	Appropri ate ICD shock (20.4%)	Cause of HF, LGE, device type (ICD and CRT-D)	2.5	9

					ischemic origin) patients who received ICD		of NYHA functional class II- IV									
8	Stroubek (2020) ¹⁸	United States	Prospecti ve observati onal study	342	Dilated cardiomyop athy patients (ischemic or idiopathic origin) patients who received ICD	48.9	LVEF≤40 %	63.5±11. 3	70. 2	1886	Quartil e 1-3: 718 Quartil e 4: 5420	27.1±6.8	All- cause mortality (9.6%) Appropri ate ICD shock (8.7%)	Age, sex, BMI, LVEF, NYHA functional class, cause of HF, history of AF, BUN, QTc, antiarrhyth mic and beta- blockers usage	2.9	9

9	Verstraeten (2021) ²⁶	Multicenter	Prospective observational study	1443	Heart failure patients who received ICD	61	LVEF<30% or <35% with heart failure symptom of NYHA functional class II, III	65.9±10.2	72	7100	N/A	26.1±6.2	All-cause mortality (13.4%) Appropriate ICD shock (7.6%)	Age, sex, sodium level, NSVT, history of AF, peripheral vascular disease, eGFR, diuretic, ACEi or ARB, aldosterone antagonist, NOAC and digitalis usage	2.4	9
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ACEi: angiotensin-converting enzyme inhibitor; AF: atrial fibrillation; ARB: angiotensin receptor blocker, BMI: body mass index; BUN: blood urea nitrogen; CAD: coronary artery disease; CKD: chronic kidney disease; CRT-D: cardiac resynchronization therapy-defibrillator; eGFR:

estimated glomerular filtration rate; HF: heart failure; ICD: implantable cardioverter-defibrillator; LGE: late gadolinium enhancement; LVEDD: left ventricular end diastolic diameter; LVEF: left ventricular ejection fraction; N/A: not available; NOAC: novel oral anticoagulant; NOS: Newcastle-Ottawa Scale; NYHA: New York Heart Association; NSVT: non-sustained ventricular tachycardia; QTc: corrected QT interval; SBP: systolic blood pressure; SD: standard deviation

Supplementary Table 2. Assessment of the risk of bias of the included studies.

Authors (Year)	Exposed truly representative	Selection of non-exposed from the same community	Exposure ascertained by secure record or interview	Demonstration of outcome of interest not present at the start of the study	Study controls for other variables	Follow up long enough for outcome to occur	Complete follow up of all subjects accounted	Subject lost to follow up unlikely to introduce bias	Score	Risk of bias
Bae (2020)	1	1	1	1	2	1	1	1	9	Low
Battipaglia (2010)	1	1	1	1	2	1	1	1	9	Low
Butt (2022)	1	1	1	1	2	1	1	1	9	Low
Cheng (2014)	1	1	1	1	2	1	1	1	9	Low
Deng (2022)	1	1	1	1	2	1	1	1	9	Low
Levine (2014)	1	1	1	1	2	0	1	1	8	Low
Mordi (2014)	1	1	1	1	2	1	1	1	9	Low
Sroubek (2020)	1	1	1	1	2	1	1	1	9	Low
Verstraelen (2021)	1	1	1	1	2	1	1	1	9	Low

Supplementary Table 3. Database search strategies

Database	Search strategy	Results
PubMed	(BNP OR B-type Natriuretic Peptide) AND ((implantable cardioverter defibrillator) OR (ICD) OR (cardiac resynchronization therapy defibrillator) OR (CRT-D))	101
Europe PMC	("BNP" OR "B-type Natriuretic Peptide") AND (("implantable cardioverter defibrillator") OR ("ICD") OR ("cardiac resynchronization therapy defibrillator") OR ("CRT-D"))	93
ScienceDirect	(BNP OR B-type Natriuretic Peptide) AND ((implantable cardioverter defibrillator) OR (ICD) OR (cardiac resynchronization therapy defibrillator) OR (CRT-D))	29