CRT vs non CRT e predittore dello scompenso: ci sono differenze?

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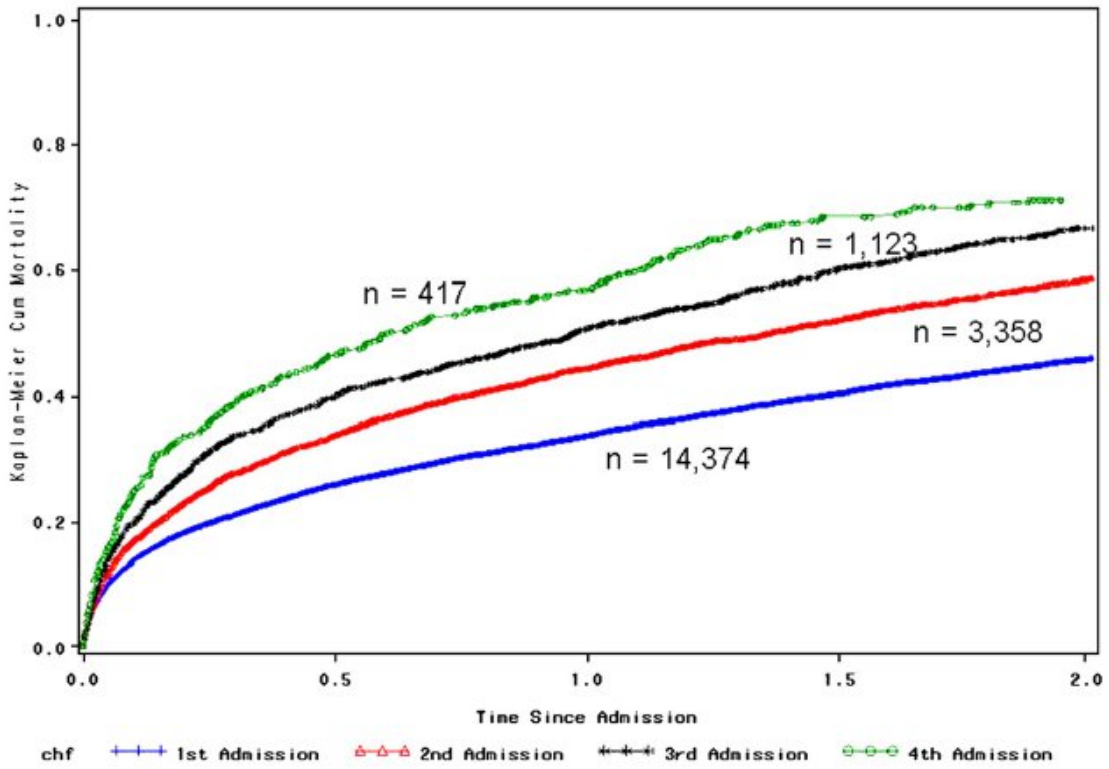
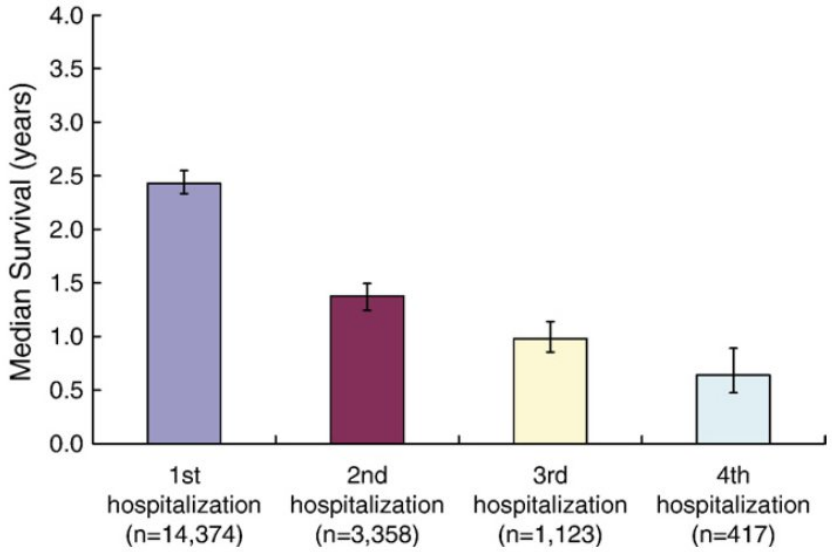
Repeated hospitalizations predict mortality in the community population with heart failure

Soko Setoguchi, MD, DrPH,[a] Lynne Warner Stevenson, MD,[b] and Sebastian Schneeweiss, MD, ScD[a] *Boston, MA*



Kaplan-Meier cumulative mortality curve for all-cause mortality after each subsequent hospitalization for HF.

Figure 2



Median survival (50% mortality) and 95% confidence limits in patients with HF after each HF hospitalization.

ESC European Society of Cardiology

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doi:10.1093/europace/euab170

PI ACE FOR ADVANCES IN CARDIAC EXPERIENCE

CLINICAL RESEARCH
Remote CIED monitoring

Combining home monitoring temporal trends from implanted defibrillators and baseline patient risk profile to predict heart failure hospitalizations: results from the SELENE HF study

Antonio D'Onofrio[1]*, Francesco Solimene[2], Leonardo Calò[3], Valeria Calvi[4], Miguel Viscusi[5], Donato Melissano[6], Vitantonio Russo[7], Antonio Rapacciuolo [8], Andrea Campana[9], Fabrizio Caravati[10], Paolo Bonfanti[11], Gabriele Zanotto[12], Edoardo Gronda[13], Antonello Vado[14], Vittorio Calzolari[15], Giovanni Luca Botto[11], Massimo Zecchin[16], Luca Bontempi[17], Daniele Giacopelli [18], Alessio Gargaro [18], and Luigi Padeletti[19]

HEARTLOGIC

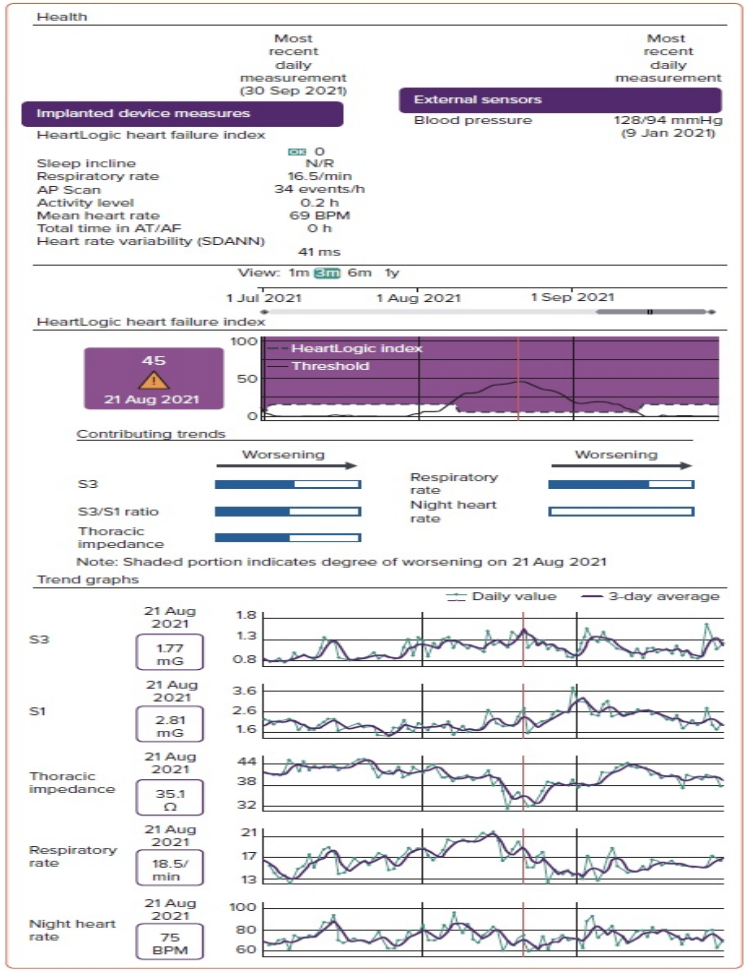
HEART SOUNDS
Reveals signs of elevated filling pressure and weakened ventricular contraction.

THORACIC IMPEDANCE
Measures fluid accumulation and pulmonary edema.

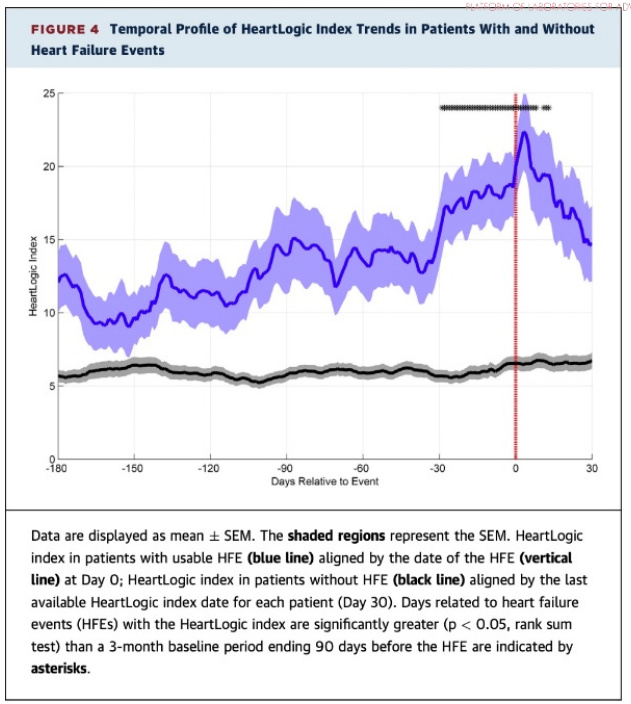
RESPIRATION
Monitors rapid shallow breathing pattern associated with shortness of breath.

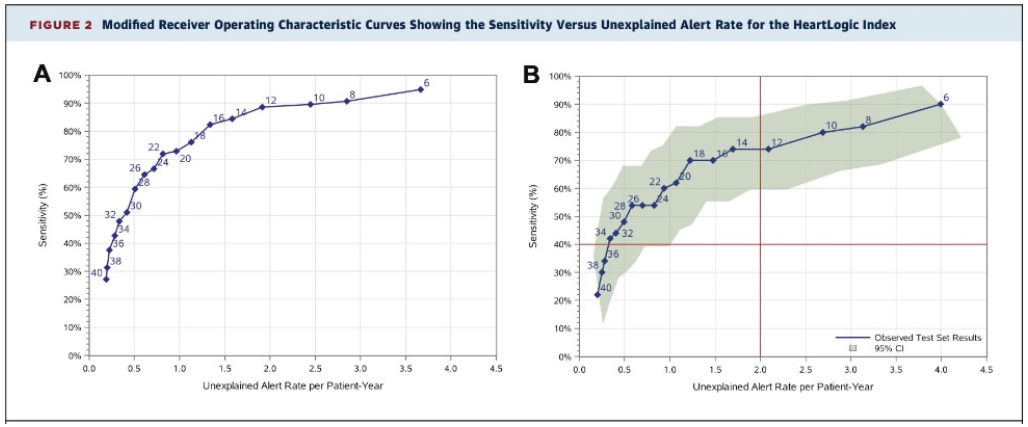
HEART RATE
Indicates cardiac status and arrhythmias.

ACTIVITY
Shows activity levels and reflects the patient's overall status and fatigue.



The MultiSENSE study,
JACC 2017

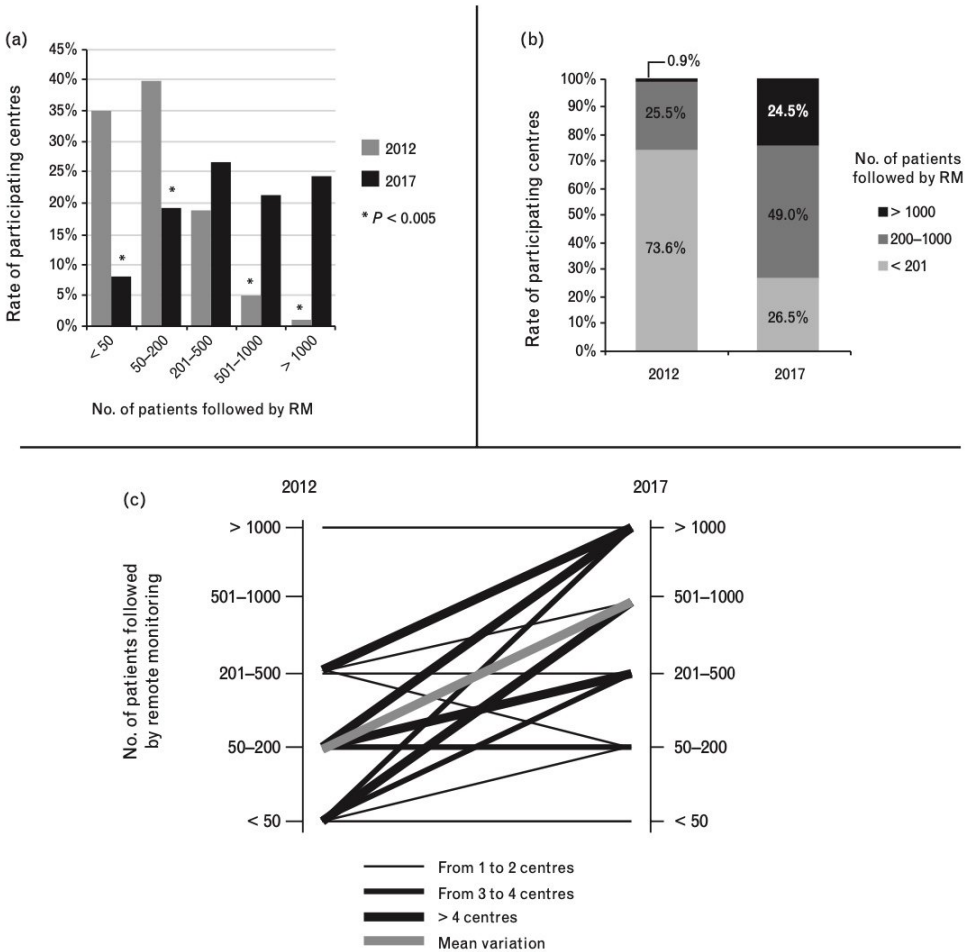




Change in the use of remote monitoring of cardiac implantable electronic devices in Italian clinical practice over a 5-year period: results of two surveys promoted by the AIAC (Italian Association of Arrhythmology and Cardiac Pacing)

Pietro Palmisano[a], Donato Melissano[b], Gabriele Zanotto[c], Giovanni Battista Perego[d], Tiziano Toselli[e], Maurizio Landolina[f], Renato Pietro Ricci[g], on behalf of the Italian Association of Arrhythmology, Cardiac Pacing (AIAC)

Fig. 2



Recommendations	Class	Level
Remote device management is recommended to reduce the number of in-office follow-ups in patients with pacemakers who have difficulties to attend in office- visits (e.g. due to reduced mobility or other commitments or according to patient preference).	I	A
Remote monitoring is recommended in case of a device component that has been recalled or is on advisory, to enable early detection of actionable events in patients, particularly those who are at increased risk (e.g. in case of pacemaker-dependency).	I	C

Recommendations	Class[a]	Level[b]
Non-invasive HTM may be considered for patients with HF in order to reduce the risk of recurrent CV and HF hospitalizations and CV death.[374]	IIb	B
Monitoring of pulmonary artery pressure using a wireless haemodynamic monitoring system may be considered in symptomatic patients with HF in order to improve clinical outcomes.[372]	IIb	B

ESC 2021

Table 2 Patient population by derivation and validation cohorts

Variables	All	Derivation cohort	Validation cohort	P-value
Number of patients	918	457	461	
Follow-up (months)	22.5 (14.1–35.8)	21.9 (13.8–33.6)	23.4 (14.6–37.1)	
Age (years)	69.1 (60.7–75.9)	68.8 (60.7–75.7)	69.3 (60.8–76.1)	0.61
Gender (male)	744 (81.0%)	366 (80.1%)	378 (82.0%)	0.46
Body mass index (kg/m^2)	26.7 (24.2–29.4)	27.0 (24.5–29.4)	26.5 (24.2–29.4)	0.33
CRT-D devices	403 (43.9%)	202 (44.2%)	201 (43.6%)	0.85
QRS duration (ms)	120 (102–150)	121 (103–150)	120 (102–150)	0.69
LVEF (%)	30 (25–34)	30 (25–34)	30 (25–35)	0.25
Systolic blood pressure (mmHg)	120 (110–130)	120 (110–130)	120 (110–130)	0.13
NYHA Class II/III	446 (48.8%)/467 (51.2%)	225 (49.4%)/230 (50.6%)	221 (48.2%)/237 (51.8%)	0.72
SHFM-predicted 1-year mortality (%)	3.8 (2.3–6.6)	3.6 (2.2–3.6)	4.0 (2.4–6.6)	0.18
Primary aetiology				
Ischaemic cardiomyopathy	413 (45.0%)	206 (45.1%)	207 (44.9%)	0.95
Dilated cardiomiopathy	365 (39.8%)	185 (40.5%)	180 (39.1%)	0.66
Comorbidities				
History of hypertension	604 (65.8%)	295 (64.6%)	309 (67.0%)	0.43
Diabetes	323 (35.4%)	153 (33.6%)	170 (37.2%)	0.26
Chronic kidney disease	194 (21.1%)	107 (23.4%)	87 (18.9%)	0.09
Atrial fibrillation history	129 (14.1%)	68 (15.0%)	61 (13.3%)	0.46
Stroke/TIA	69 (7.5%)	33 (7.2%)	36 (7.8%)	0.73
Valvular surgery	68 (7.4%)	37 (8.1%)	31 (6.7%)	0.45
Blood, urine tests				
Sodium (mg/dL)	140 (138–142)	140 (138–142)	140 (138–142)	0.38
Blood urea nitrogen (mg/dL)	35.0 (22.4–52.0)	36.9 (23.0–52.0)	34.0 (22.4–50.5)	0.51
Haemoglobin (g/dL)	13.4 (12.2–14.6)	13.5 (12.3–14.7)	13.3 (12.1–14.5)	0.06
Lymphocytes (%)	25.5 (19.8–31.8)	25.6 (19.8–31.8)	25.3 (19.8–31.9)	0.98
Serum uric acid (mg/dL)	6.1 (4.8–7.6)	6.0 (4.8–7.7)	6.2 (4.8–7.5)	0.81
Cholesterol (mg/dL)	153 (127–188)	155 (129–187)	152 (125–190)	0.71
Baseline therapy				
Diuretics	797 (86.8%)	400 (87.5%)	397 (86.1%)	0.55
Beta-blockers	793 (86.4%)	395 (86.4%)	398 (86.3%)	0.96
ACE inhibitors	523 (57.0%)	259 (56.7%)	264 (57.3%)	0.86
Aldosterone antagonists	240 (26.1%)	133 (29.1%)	107 (23.2%)	0.04
Angiotensin receptor blockers	196 (21.3%)	100 (21.9%)	96 (20.8%)	0.70
Calcium-channel blockers	75 (8.2%)	36 (7.9%)	39 (8.5%)	0.75
Statins	553 (60.2%)	286 (62.6%)	267 (57.9%)	0.15
Antiplatelets	596 (64.9%)	298 (65.2%)	298 (64.6%)	0.86
Anticoagulants	228 (24.8%)	109 (23.9%)	119 (25.8%)	0.49
Amiodarone	169 (18.4%)	81 (17.7%)	88 (19.1%)	0.59

Data are shown as median (interquartile range) or as number (% of non-missing data).
ACE, angiotensin-converting enzyme; CRT-D, cardiac resynchronization therapy defibrillator; LVEF, left ventricle ejection fraction; NYHA, New York Heart Association; SHFM, Seattle Heart Failure Model; TIA, transient ischaemic attack.

SELENE

TABLE 2 Patient Characteristics

	Measurement	Development Set (n = 531)	Test Set (n = 443)	p Value
Age at implantation (yrs)	Mean ± SD	66.3 ± 10.9	66.8 ± 10.3	0.51
Sex	Male	387 (73)	314 (71)	0.50
Race	White, not of Hispanic origin	367 (75)	285 (79)	0.31
United States	Yes	491 (92)	362 (82%)	<0.0001
History of cardiac ischemia	Yes	277 (52)	217 (49)	0.31
History of dilated cardiomyopathy	Yes	301 (57)	271 (61)	0.16
History of valvular disease	Yes	162 (31)	130 (29)	0.68
History of valve surgery	Yes	50 (9)	40 (9)	0.83
Previous MI	Yes	211 (40)	171 (39)	0.69
Previous CABG	Yes	156 (29)	128 (29)	0.87
Primary atrial arrhythmia	Atrial fibrillation	136 (26)	118 (27)	0.88
Renal disease	Yes	143 (27)	101 (23)	0.13
NYHA functional class	I/II/III/IV	5%/64%/27%/0%	4%/64%/25%/1%	0.30
LVEF (%)	Mean ± SD	29.3 ± 11.5	29.7 ± 11.4	0.63
Body mass index (kg/m^2)	Mean ± SD	30.2 ± 6.7	30.5 ± 6.9	0.48
Systolic blood pressure (mm Hg)	Mean ± SD	121 ± 19	125 ± 19	0.009
Diastolic blood pressure (mm Hg)	Mean ± SD	71 ± 11	73 ± 11	0.02
Resting heart rate (beats/min)	Mean ± SD	71 ± 10	71 ± 10	0.72
Resting respiratory rate (breaths/min)	Mean ± SD	18 ± 6	18 ± 7	0.45
Sodium (mEq/l)	Mean ± SD	139 ± 3	140 ± 3	0.03
Potassium (mEq/l)	Mean ± SD	4.4 ± 0.6	4.4 ± 0.5	1.00
Hematocrit (%)	Mean ± SD	39.3 ± 4.8	40.3 ± 5.0	0.004
Total hemoglobin (g/dl)	Mean ± SD	13.1 ± 1.7	13.3 ± 1.8	0.05
Total plasma protein (g/dl)	Mean ± SD	7.1 ± 0.7	7.1 ± 0.6	0.58
BUN (mg/dl)	Mean ± SD	25.0 ± 13.7	23.1 ± 11.3	0.04
Urea (mmol/l)	Mean ± SD	5.6 ± 2.7	6.5 ± 1.8	0.09
Serum creatinine (mg/dl)	Mean ± SD	1.4 ± 0.9	1.3 ± 0.7	0.08
NT-proBNP (pg/ml)	Mean ± SD	2,142 ± 5,290	1,576 ± 3,023	0.07
Concomitant medications	Anticoagulant agents	462 (88)	356 (82)	0.005
	Beta-blockers	490 (94)	405 (93)	0.70
	Diuretic agents	399 (76)	340 (78)	0.50
	ACE inhibitors + ARBs	436 (83)	354 (81)	0.42
	Aldosterone antagonist	196 (37)	193 (44)	0.03
	Vasoactive drugs	123 (23)	102 (23)	0.98
	Cardiac glycosides	139 (27)	107 (25)	0.48
	Antiarrhythmic medications	113 (22)	97 (22)	0.80
	Calcium-channel blockers	42 (8)	31 (7)	0.60

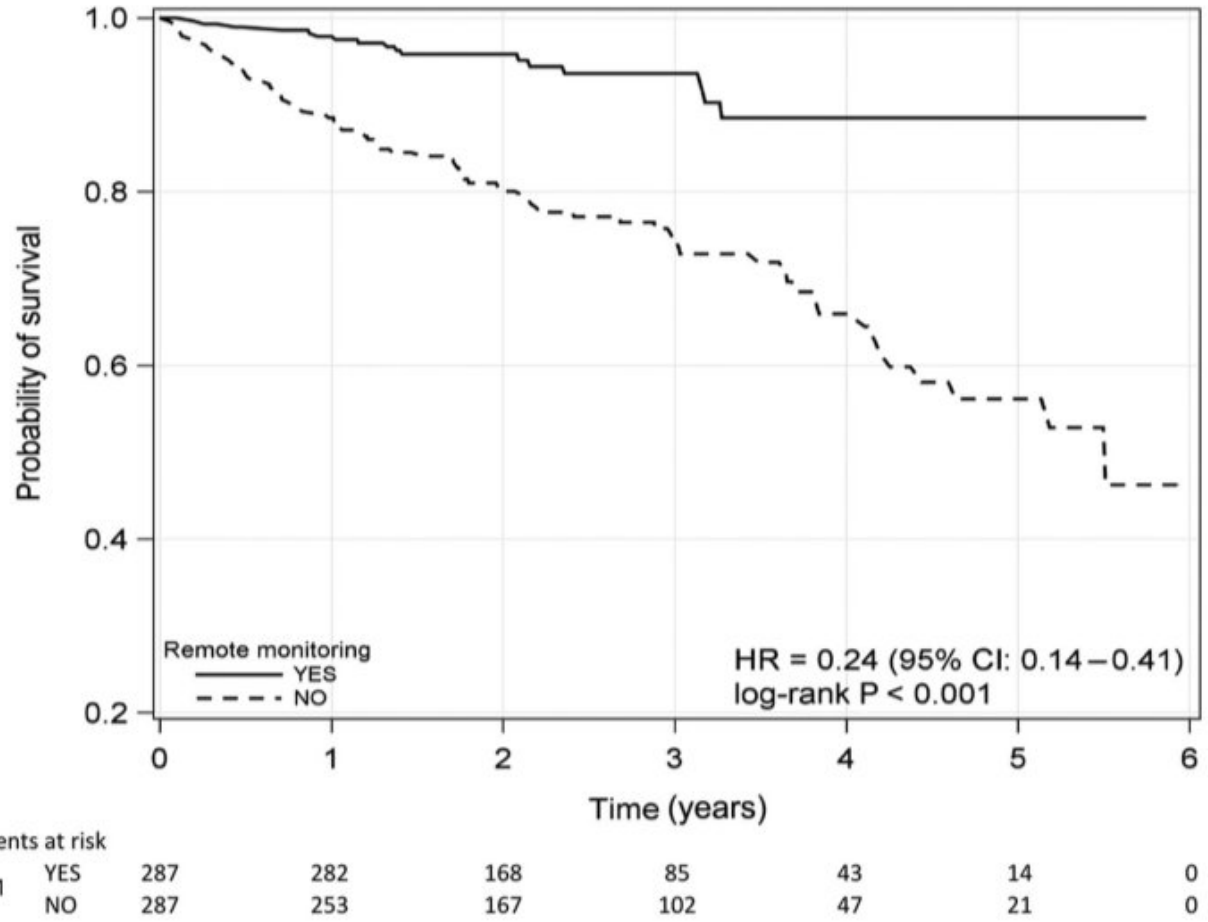
Values are mean ± SD or n (%).
ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; BUN = blood urea nitrogen; CABG = coronary artery bypass grafting; LVEF = left ventricular ejection fraction; MI = myocardial infarction; NT-proBNP = N-terminal pro-B-type natriuretic peptide; NYHA = New York Heart Association.

HEARTLOGIC

PLACE
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

Impact of Remote Monitoring on Long-Term Prognosis in Heart Failure Patients in a Real-World Cohort: Results From All-Comers COMMIT-HF Trial

ANNA KUREK, M.D.,* MATEUSZ TAJSTRA, M.D., PH.D.,* ELZBIETA GADULA-GACEK, M.D.,* PIOTR BUCHTA, M.D., PH.D.,* MICHAL SKRZYPEK, PH.D.,†,‡ LUKASZ PYKA, M.D.,* MICHAL WASIAK, M.D.,* MALGORZATA SWIETLINSKA, M.D.,* MICHAL HAWRANEK, M.D., PH.D.,* LECH POLONSKI, M.D., PH.D.,* MARIUSZ GASIOR, M.D., PH.D.,* and JEDRZEJ KOSIUK, M.D., F.E.S.C., PH.D.§



J Cardiovasc Electrophysiol. 2017 Apr;28(4):425-431.

Impact of Remote Monitoring on Long-Term Prognosis in Heart Failure Patients in a Real-World Cohort: Results From All-Comers COMMIT-HF Trial

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	Total	RM YES (n/N [%])	RM NO (n/N [%])	HR (95% CI)	Outcome: Death P value	Interaction P value
Age (years)						
<65	347	10/178 (5.6)	40/169 (23.7)	0.30 (0.15 – 0.60)	<0.01	0.53
≥65	227	7/109 (6.4)	40/118 (33.9)	0.18 (0.08 – 0.39)	<0.01	
Gender						
Woman	92	2/46 (4.3)	10/46 (21.7)	0.23 (0.05 – 1.03)	0.05	0.99
Man	482	15/241 (6.2)	70/241 (29.0)	0.24 (0.14 – 0.42)	<0.01	
Device						
ICD	405	10/205 (4.9)	52/200 (26.0)	0.23 (0.12 – 0.45)	<0.01	0.61
CRT	169	7/82 (8.5)	28/87 (32.2)	0.26 (0.12 – 0.61)	<0.01	
Etiology						
ICM	409	12/196 (6.1)	63/213 (29.6)	0.22 (0.12 – 0.41)	<0.01	0.70
DCM	164	5/90 (5.6)	17/74 (23.0)	0.29 (0.11 – 0.79)	0.02	
NYHA						
I+II	338	7/169 (4.1)	42/169 (24.9)	0.19 (0.09 – 0.43)	<0.01	0.48
III+IV	236	10/118 (8.5)	38/118 (32.2)	0.29 (0.15 – 0.59)	<0.01	
GFR mL/min/1.73 m^2						
<60	162	6/81 (7.4)	30/81 (37.0)	0.21 (0.09 – 0.51)	<0.01	0.67
≥60	412	11/206 (5.3)	50/206 (24.3)	0.26 (0.13 – 0.5)	<0.01	
Overall	**574**	**17/287 (5.9)**	**80/287 (27.9)**	**0.24 (0.14 – 0.41)**	**<0.01**	

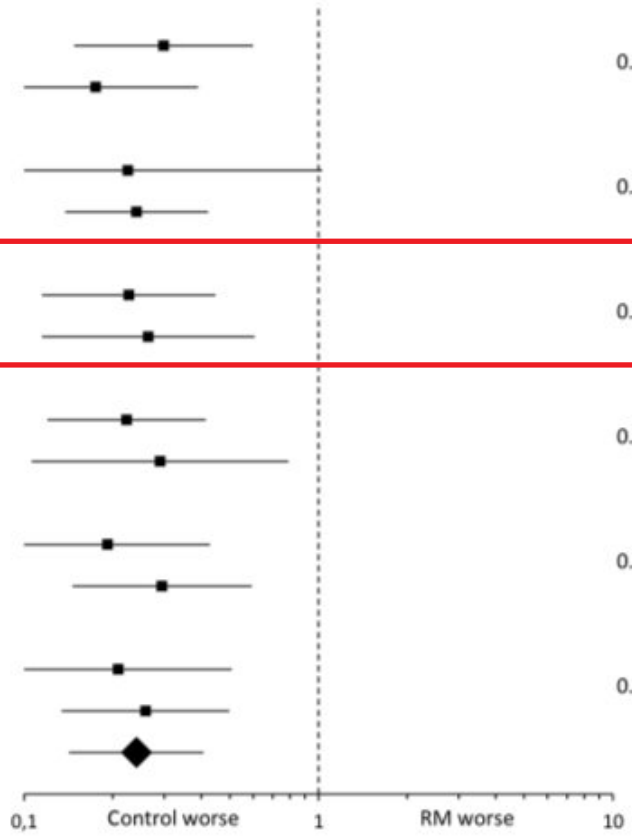


Figure 3. *Subgroup analyses of the primary outcome.*

Selection and outcome of implantable cardioverter-defibrillator patients with and without cardiac resynchronization therapy: Comparison of 4384 patients from the German Device Registry to randomized controlled trials

Julia Köbe[1] | Kevin Willy[1] | Jochen Senges[2] | Matthias Hochadel[2] | Thomas Kleemann[3] | Stefan G. Spitzer[4] | Dietrich Andresen[5] | Joachim Jehle[6] | Gerhard Steinbeck[7] | Istvan Szendey[8] | Christian Butter[9] | Johannes Brachmann[10] | Ellen Hoffmann[11] | Lars Eckardt[1]

TABLE 1 Baseline patient data

	ICD	CRT-D	*p*-value
Number of patients (*n*)	3100	1284	
Proportion of patients (%)	70.7	29.3	
Male (%)	81.7	77.4	.001
Mean age (years ± SD)	63.9 ± 13.4	67.6 ± 11.0	<.001
Median BMI (kg/m²)[a]	26.7 (24.4; 30.0)	27.4 (23,6; 30,9)	.54
Device type			
VVI-ICD (%)	73.9	NA	
DDD-ICD (%)	26.1	NA	
Median ejection fraction (%)	30 (25; 40)	25 (20; 30)	<.001
Ejection fraction ≤ 35% (%)	70.8	94.5	<.001
NYHA class at time of operation (%)			<.001
None/Class I	23.2	1.7	
Class II	46.7	14.6	
Class III	28.3	76.8	
Class IV	1.9	7.0	
Cardiac disease (%)			
Coronary artery disease	64.7	51.6	<.001
Prior myocardial infarction	38.2	23.8	<.001
History of CABG	17.1	15.6	.21
Dilated CM	26.8	53.3	<.001
Hypertrophic CM	4.0	1.2	<.001
Acquired valvular disease	1.5	0.6	.016
Congenital heart disease	0.3	0.3	.76
Electrical heart disease	2.7	0.2	<.001
Comorbidities and risk factors (%)			
History of stroke	4.1	3.5	.34
Peripheral arterial disease	3.6	3.3	.61
Diabetes	26.7	31.4	.002
Hypertension	51.8	56.8	.002
COPD	3.6	5.5	.005
Renal disease	15.4	24.0	<.001
Dialysis treatment[a]	7.5	12.4	.19
Indication for device (%)			
Primary prevention	56.5	84.7	<.001
Secondary prevention	43.5	15.3	<.001
VF	17.6	3.7	<.001
VT	18.8	8.6	<.001
Syncope/induced VT	5.9	2.1	<.001
Other	1.1	0.9	.70

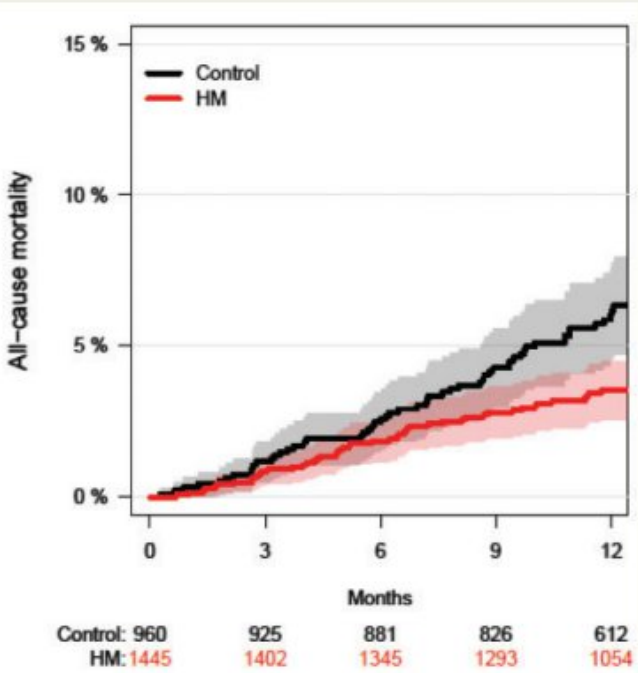
European Heart Journal (2017) **38**, 1749–1755
doi:10.1093/eurheartj/ehx015

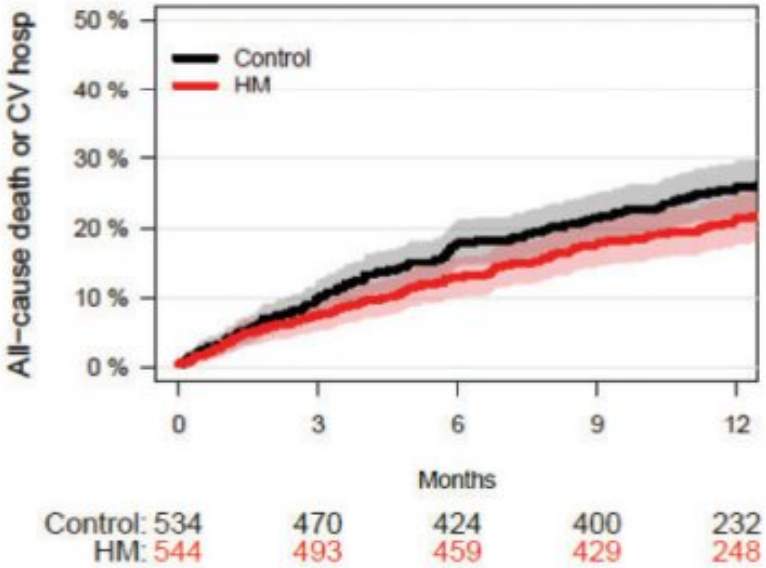
CLINICAL RESEARCH
Arrhythmia/electrophysiology

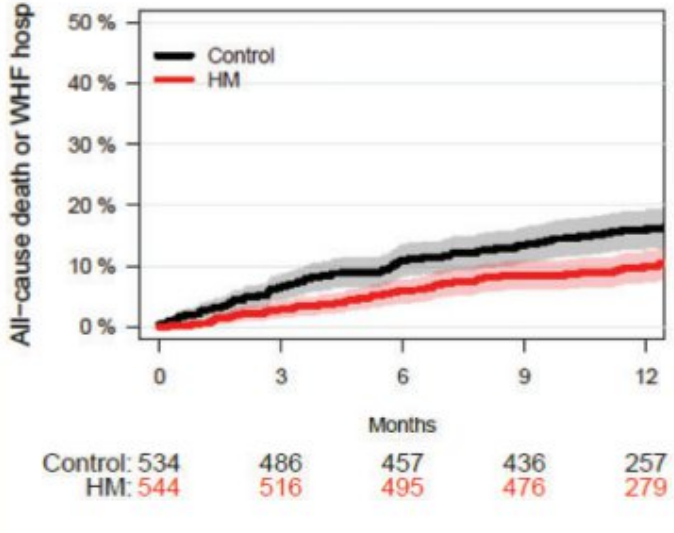
Daily remote monitoring of implantable cardioverter-defibrillators: insights from the pooled patient-level data from three randomized controlled trials (IN-TIME, ECOST, TRUST)

Gerhard Hindricks[1]*, Niraj Varma[2], Salem Kacet[3], Thorsten Lewalter[4], Peter Søgaard[5], Laurence Guédon-Moreau[3], Jochen Proff[6], Thomas A. Gerds[7], Stefan D. Anker[8], and Christian Torp-Pedersen[9]

PLACE
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE







Clinical Research in Cardiology (2019) 108:1117–1127
https://doi.org/10.1007/s00392-019-01447-5

ORIGINAL PAPER

Implant-based multi-parameter telemonitoring of patients with heart failure and a defibrillator with vs. without cardiac resynchronization therapy option: a subanalysis of the IN-TIME trial

Johann Christoph Geller[1,2] · Thorsten Lewalter[3,4] · Niels Eske Bruun[5] · Milos Taborsky[6,7] · Frank Bode[8,9] · Jens Cosedis Nielsen[10] · Christoph Stellbrink[11] · Steffen Schön[12] · Holger Mühling[13] · Hanno Oswald[14] · Sebastian Reif[15] · Stefan Kääb[16] · Peter Illes[17] · Jochen Proff[18] · Nikolaos Dagres[19] · Gerhard Hindricks[19] · For the IN-TIME Study Group

Abstract

Aims In the IN-TIME trial, automatic daily implant-based multiparameter telemonitoring significantly improved clinical outcomes in patients with chronic systolic heart failure and implantable cardioverter-defibrillator (ICD) or cardiac resynchronization therapy defibrillator (CRT-D). We compared IN-TIME results for ICD and CRT-D subgroups.

Methods Patients with LVEF ≤ 35%, NYHA class II/III, optimized drug treatment, no permanent atrial fibrillation, and a dual-chamber ICD ($n = 274$) or CRT-D ($n = 390$) were randomized 1:1 to telemonitoring or no telemonitoring for 12 months. Primary outcome measure was a composite clinical score, classified as worsened if the patient died or had heart failure-related hospitalization, worse NYHA class, or a worse self-reported overall condition.

Results The prevalence of worsened score at study end was higher in CRT-D than ICD patients (26.4% vs. 18.2%; $P = 0.014$), as was mortality (7.4% vs. 4.1%; $P = 0.069$). With telemonitoring, odds ratios (OR) for worsened score and hazard ratios (HR) for mortality were similar in the ICD [OR = 0.55 ($P = 0.058$), HR = 0.39 ($P = 0.17$)] and CRT-D [OR = 0.68 ($P = 0.10$), HR = 0.35 ($P = 0.018$)] subgroups (insignificant interaction, $P = 0.58$–0.91).

Conclusion Daily multiparameter telemonitoring has a potential to reduce clinical endpoints in patients with chronic systolic heart failure both in ICD and CRT-D subgroups. The absolute benefit seems to be higher in higher-risk populations with worse prognosis.

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PLACE
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

Characteristics	ICD ($n=274$)	CRT-D ($n=390$)	P value[a] ICD vs. CRT-D
Age, years	65 [58–70]	68 [62–74]	*<0.001*
Male gender	233 (85.0%)	303 (77.7%)	0.021
Body mass index	27.5 [24.7–31.1]	27.5 [24.6–30.5]	0.75
LVEF[b], %	28.0 [24.5–30.0]	25.0 [20.0–30.0]	*<0.001*
NYHA[c]			*<0.001*
Class II	183 (66.8%)	102 (26.2%)	n.a
Class III	91 (33.2%)	287 (73.8%)	n.a
Intrinsic QRS duration, ms	110 [110–124]	150 [130–165]	*<0.001*
Resting heart rate, beats/min	70 [60–78]	70 [60–80]	0.27
Indication for defibrillator			
Primary prevention	204 (74.5%)	321 (82.3%)	0.016
Secondary prevention	70 (25.5%)	69 (17.7%)	n.a
Medical history			
Coronary artery disease	219 (79.9%)	239 (61.3%)	*<0.001*
Stroke	19 (6.9%)	42 (10.8%)	0.10
Transient ischemic attack	2 (0.7%)	11 (2.8%)	0.085
Hypertension	187 (68.2%)	276 (70.8%)	0.49
Atrial fibrillation	67 (24.5%)	101 (25.9%)	0.72
Paroxysmal	43 (15.8%)	69 (17.7%)	n.a.
Persistent	23 (8.4%)	30 (7.7%)	n.a.
COPD	39 (14.2%)	55 (14.1%)	1.0
Diabetes mellitus	102 (37.2%)	164 (42.1%)	0.23
Renal insufficiency	67 (24.5%)	132 (33.8%)	0.010
Medication			
Diuretic	252 (92.0%)	368 (94.4%)	0.27
Spironolactone	138 (50.4%)	219 (56.2%)	0.16
ACE inhibitor or ARB	251 (91.6%)	342 (87.7%)	0.13
Beta blocker	249 (90.9%)	359 (92.1%)	0.67
Any antiarrhythmic	41 (15.0%)	65 (16.7%)	0.59
Anticoagulant	80 (29.2%)	123 (31.5%)	0.55

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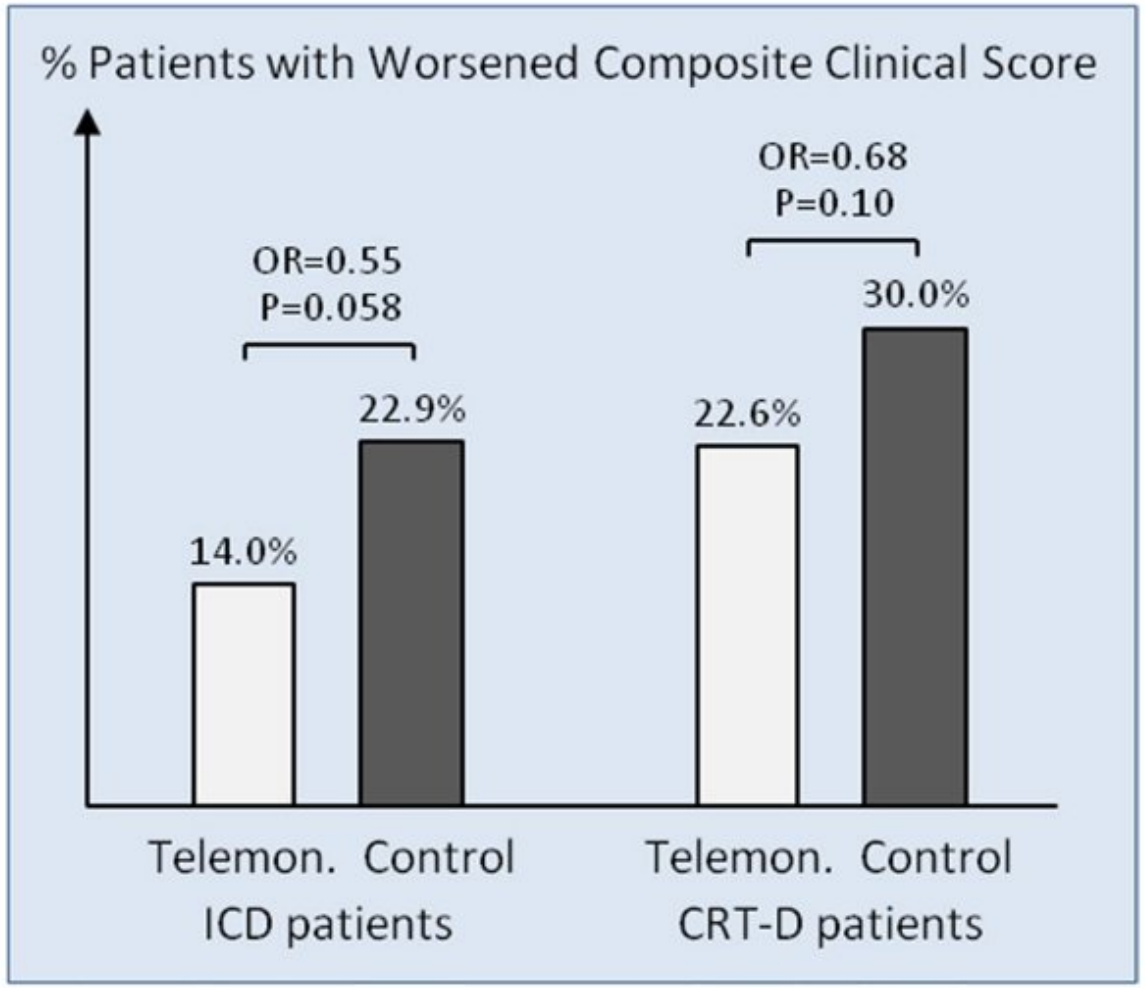
Johann Christoph Geller[1,2] · Thorsten Lewalter[3,4] · Niels Eske Bruun[5] · Milos Taborsky[6,7] · Frank Bode[8,9] · Jens Cosedis Nielsen[10] · Christoph Stellbrink[11] · Steffen Schön[12] · Holger Mühling[13] · Hanno Oswald[14] · Sebastian Reif[15] · Stefan Kääb[16] · Peter Illes[17] · Jochen Proff[18] · Nikolaos Dagres[19] · Gerhard Hindricks[19] · For the IN-TIME Study Group



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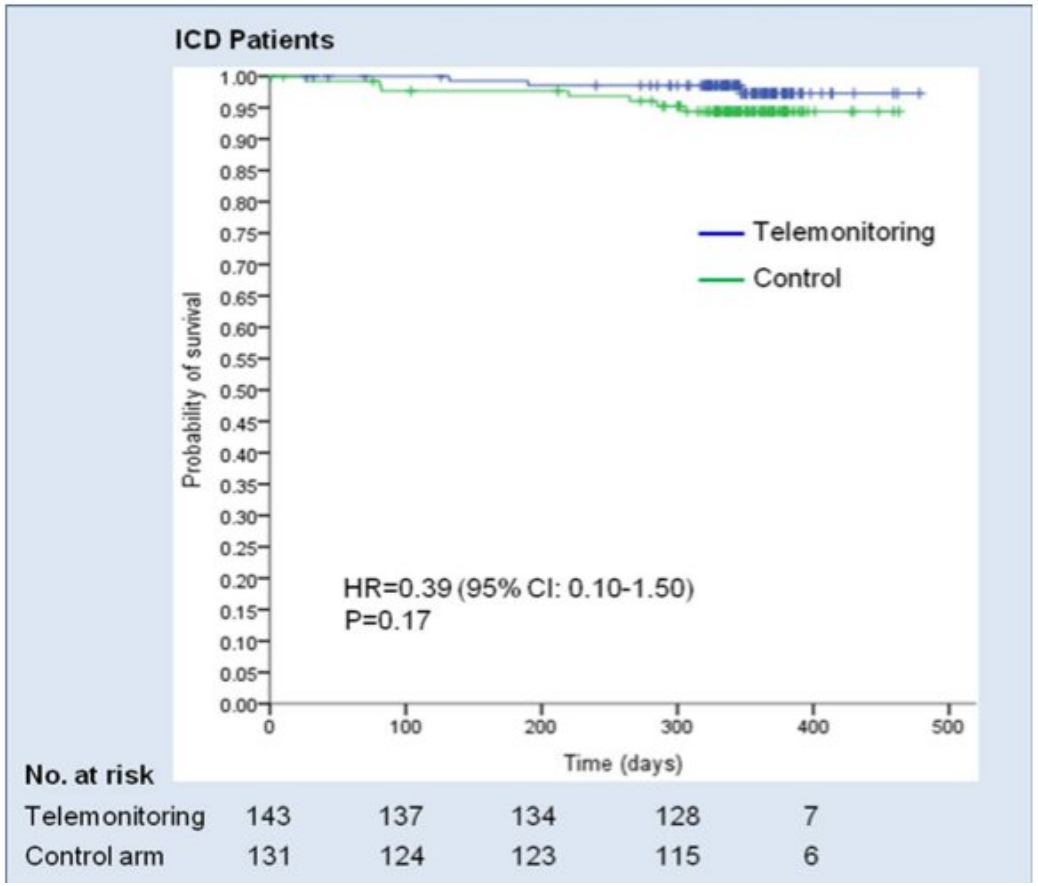

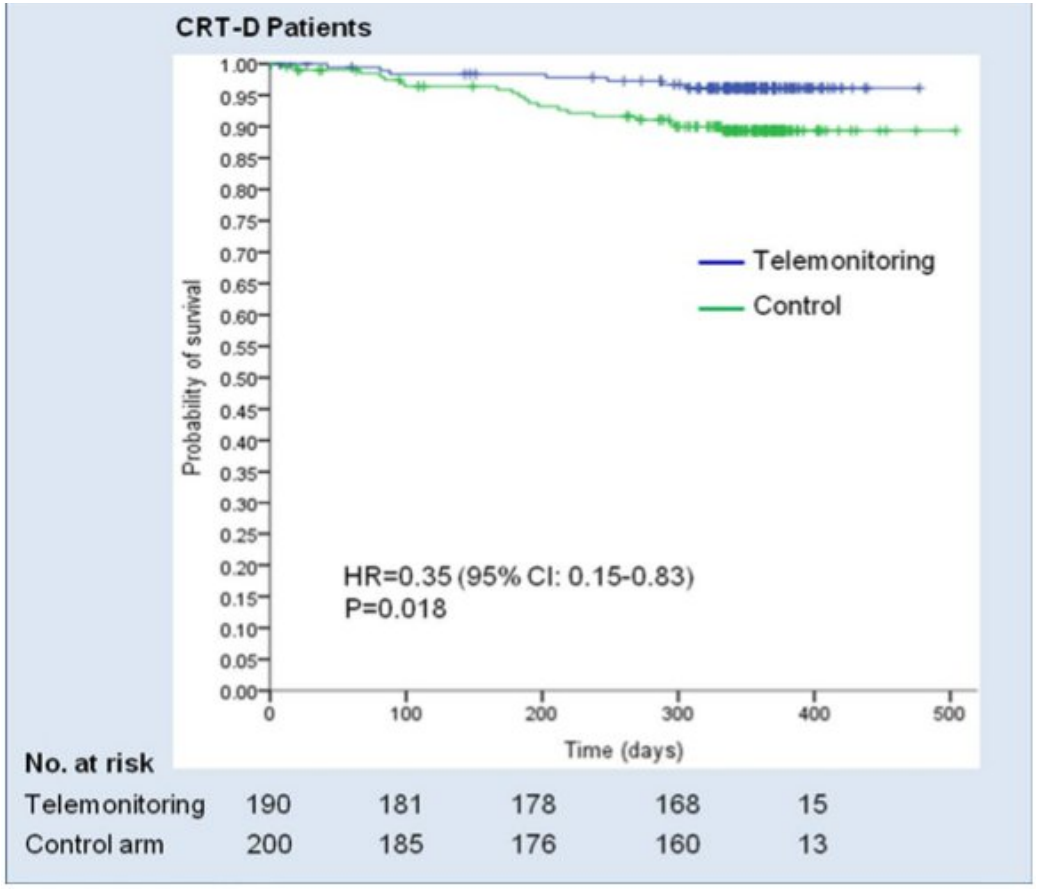

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Europace (2019) 21, 846–855
doi:10.1093/europace/euz011

REVIEW

PLACE
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

Remote monitoring of implantable cardioverter-defibrillators and resynchronization devices to improve patient outcomes: dead end or way ahead?

Frieder Braunschweig[1]*, Stefan D. Anker[2], Jochen Proff[3], and Niraj Varma[4]

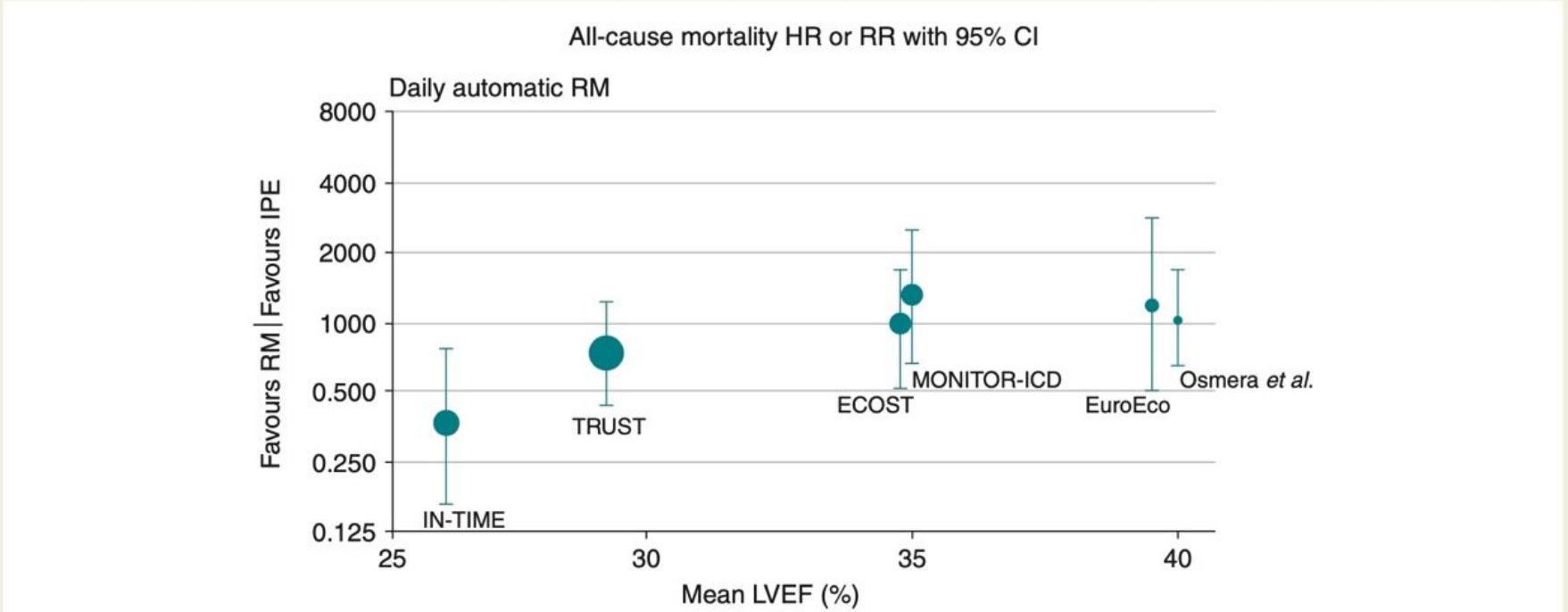

Figure 3 Scatter diagram of all-cause mortality HR or RR (whatever available in *Table 1*), for RM+IPE vs. IPE alone, as a function of mean LVEF—results from randomized controlled trials with daily RM. Study acronyms as in *Table 1*. Diameters of the circles are proportional to the number of randomized patients. Only IN-TIME observed a statistically significant reduction in mortality. CI, confidence interval; HR, hazard ratio; IPE, in-person evaluation; LVEF, left ventricular ejection fraction; RM, remote monitoring; RR, relative risk.

Conclusions

- The benefit of daily automated Home Monitoring over standard in-office follow-up is largely driven by the prevention of worsening heart failure events.
- Both CRT-D and ICD patients are at risk of heart failure events, but the risk seems to be greater in CRT-D recipients
- CRT-D patients have worse baseline characteristics compared to ICD patients (older, more advanced heart failure).
- The observed greater absolute benefit of telemonitoring in the CRT-D subgroup (e.g., mortality reduction by an absolute 6.8% vs. 2.9% in ICD patients) is in agreement with more telemonitoring alerts per patient-year (+ 19%) and more triggered contacts
- Patients with more advanced heart failure may gain a greater clinical benefit.