



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

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Imaging e Stratificazione del Rischio nella Cardiopatia Ischemica

STRATIFICAZIONE DEL RISCHIO DI MORTE IMPROVVISA NEL POST-IMA: NON SOLO IMAGING E FRAZIONE DI EIEZIONE

Maria Teresa La Rovere

Istituti Clinici Scientifici Maugeri – Montescano (Pavia)

Antonella Sette

Policlinico Casilino - Roma





AGENDA

La stratificazione del rischio di morte improvvisa (nel post-infarto) nelle Linee Guida.

Il ruolo dei marker di rischio non invasivi nella stratificazione prognostica.

Nuove opportunità di ricerca clinica derivanti da device mobili e indossabili.

2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

Recommendation Table 23 — Recommendations for risk stratification and treatment of ventricular arrhythmias early after myocardial infarction

Recommendations	Class ^a	Level ^b
Risk stratification		
Early (before discharge) assessment of LVEF is recommended in all patients with acute MI. ^{567,568}	I	B
In patients with pre-discharge LVEF $\leq 40\%$, re-evaluation of LVEF 6–12 weeks after MI is recommended to assess the potential need for primary prevention ICD implantation. ^{568,573,574}	I	C

Recommendation Table 24 — Recommendations for risk stratification, sudden cardiac death prevention, and treatment of ventricular arrhythmias in chronic coronary artery disease

Recommendations	Class ^a	Level ^b
Risk stratification and primary prevention of SCD		
ICD therapy is recommended in patients with CAD, symptomatic heart failure (NYHA class II–III), and LVEF $\leq 35\%$ despite ≥ 3 months of OMT. ^{354,356}	I	A
ICD therapy should be considered in patients with CAD, NYHA class I, and LVEF $\leq 30\%$ despite ≥ 3 months of OMT. ³⁵⁴	IIa	B
ICD implantation should be considered in patients with CAD, LVEF $\leq 40\%$ despite ≥ 3 months of OMT, and NSVT, if they are inducible for SMVT by PES. ³⁵⁵	IIa	B

2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

7.1.1.3.2. Primary prevention of sudden cardiac death in patients with preserved or mildly reduced ejection fraction. There are no data supporting primary prophylactic ICD implantation in post-infarct patients with preserved or mildly reduced LVEF. These patients are heterogeneous with regard to their potential arrhythmic substrate, and efforts are under way to identify those with the highest risk for SCD. PES is recommended in post-infarct patients in whom syncope remains unexplained after non-invasive evaluation to guide patient management (Figure 15).¹⁴⁶

In the PRESERVE-EF study, 41 of 575 post-infarct patients with an LVEF $\geq 40\%$ and one non-invasive ECG risk factor more than 40 days post-MI were inducible for VT/VF during PES and received an ICD.¹⁵¹ During the 32-month follow-up period, no SCD occurred and 9 of 37 ICD patients received an appropriate ICD therapy. However, the role of appropriate ICD treatment as surrogate for SCD in patients with preserved LVEF is unknown, and randomized trials are needed. Prophylactic treatment with AADs other than beta-blockers is not indicated regardless of the LVEF.^{556,578,579}

Non-Invasive ECG Risk Factors

- > 30 PVCs/h , NSVT
- Potenziali tardivi (2-3 criteri +)
- QTc > 440 ms (σ) e > 450 ms (φ)
- Alternanza onda T ($> 65\mu V$)
- Ridotta Heart Rate Variability (SDNN < 70 ms)
- Alterata Deceleration Capacity (< 4.5 ms)
- Alterata Heart Rate Turbulence (HRT slope < 2.5 ms)

Two Steps Approach

Arrhythmic risk stratification in post-myocardial infarction patients with preserved ejection fraction: the PRESERVE EF study

575 Post-MI pts (> 40 days), mean age 57 yrs,
LVEF \geq 40% (mean 51%), no active ischemia

Two-step stratification algorithm

- 24-h Holter and SAECG
- Invasive PVS if at least one +

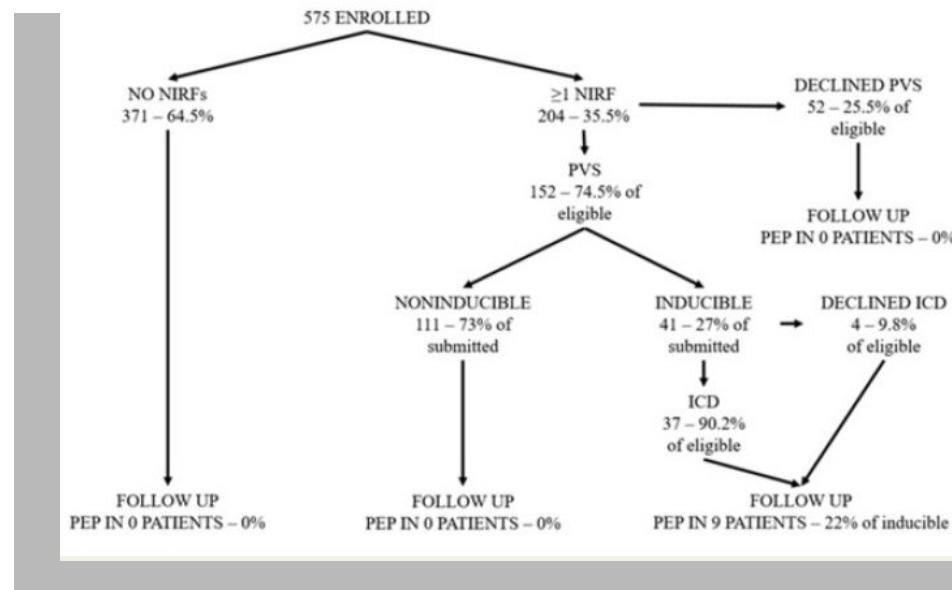
GROUP 1 - No NIRF - No PVS

GROUP 2 - At least 1 NIRF - no inducible PVS

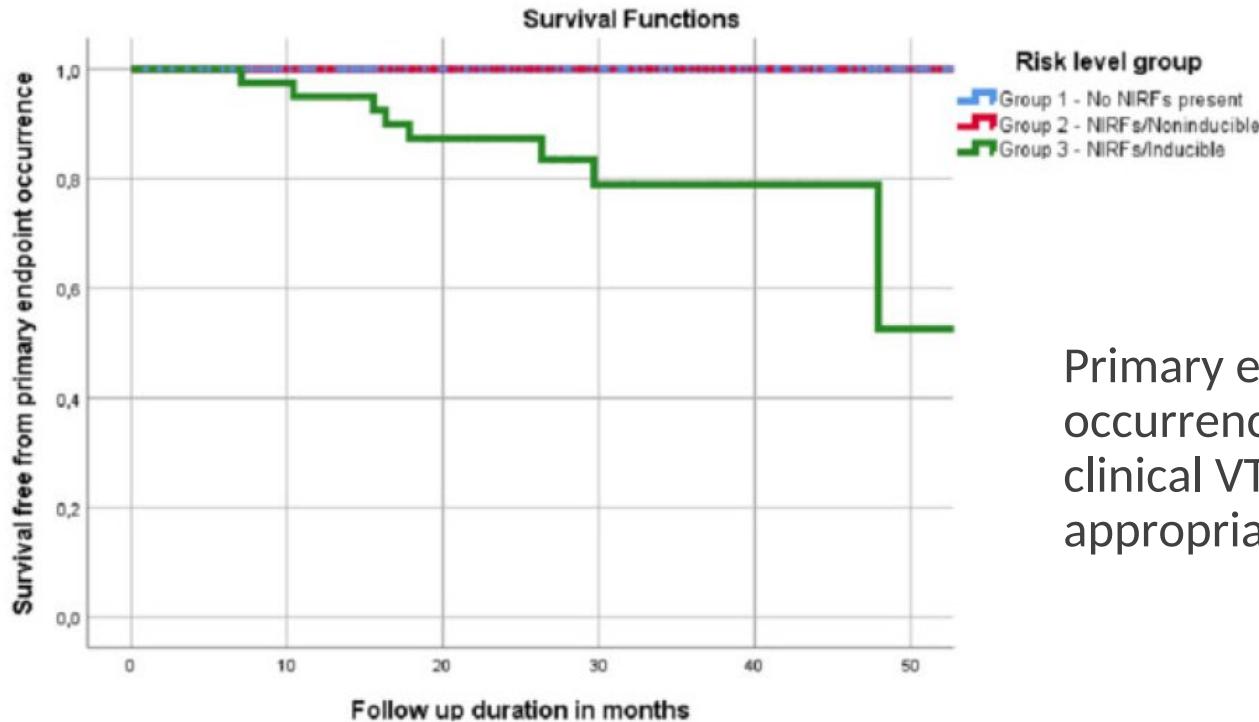
GROUP 3 - At least 1 NIRF AND inducible PVS

Primary end-point: Major
Arrhythmic Events

Mean FU: 32 months



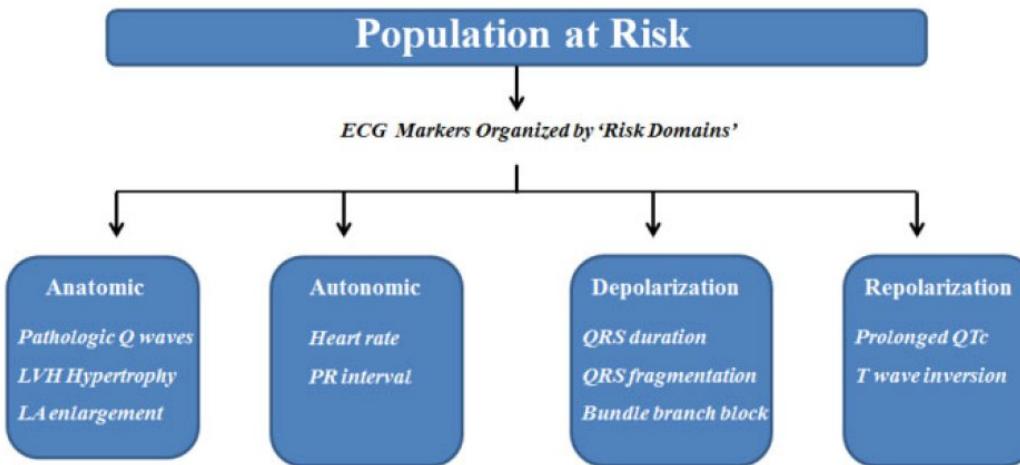
Arrhythmic risk stratification in post-myocardial infarction patients with preserved ejection fraction: the PRESERVE EF study



Primary end-point:
occurrence of either SCD,
clinical VT/VF or/and
appropriate ICD activation

Simple electrocardiographic measures improve sudden arrhythmic death prediction in coronary disease

Valutare il potere predittivo di uno score ottenuto combinando parametri ECG di routine in funzione dei differenti aspetti fisiopatologici del rischio aritmico.

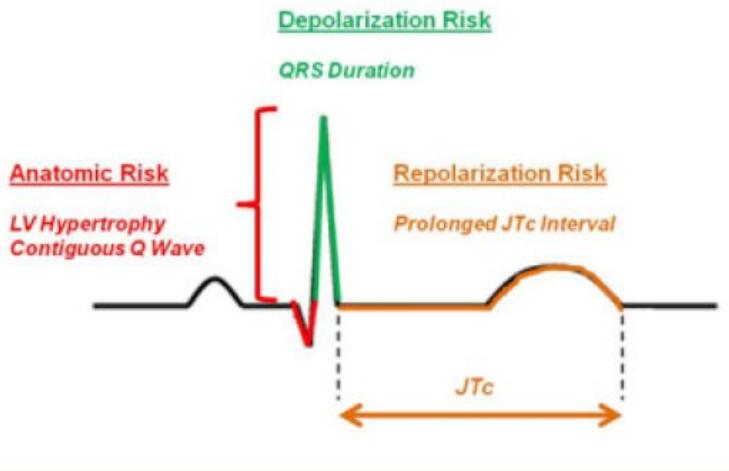


Coorte di derivazione 5462 pazienti con FE 35-50% PRE-DETERMINE
Coorte di validazione 1900 pazienti con FE > 50% ARTEMIS

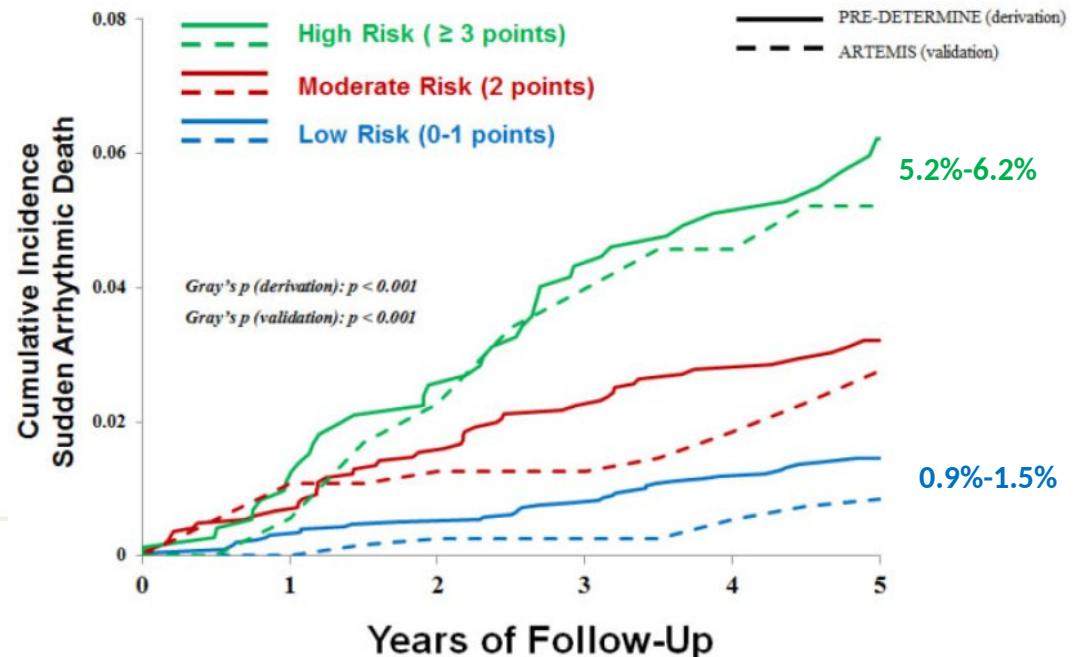
NA Chatterjee et al., for the PREDETERMINE Investigators, Eur Heart J 2020; 41: 1988-99

Simple electrocardiographic measures improve sudden arrhythmic death prediction in coronary disease

ECG Score: Q wave, LVH, QRS, JTc



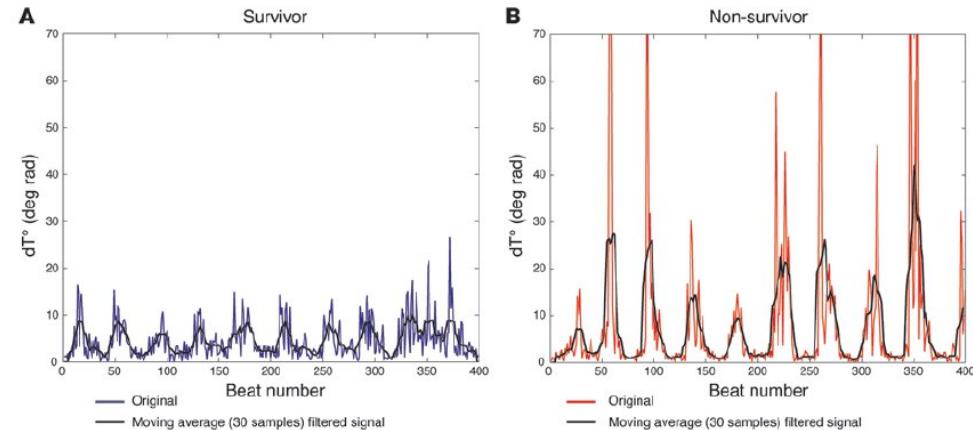
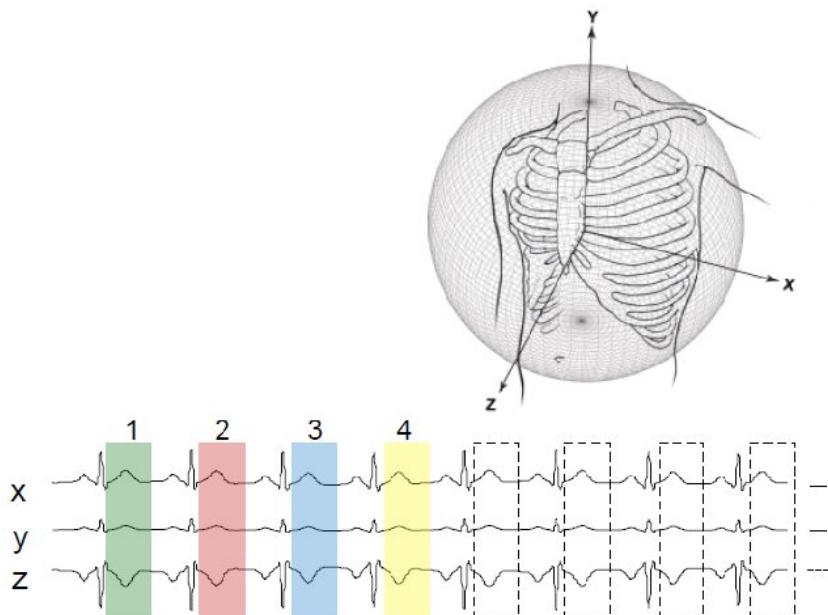
ECG Non Predictors:
Heart rate, PR, QRS fragmentation



ECG Markers

Periodic Repolarization Dynamics

(effetti dell'attività simpatica sulla ripolarizzazione)

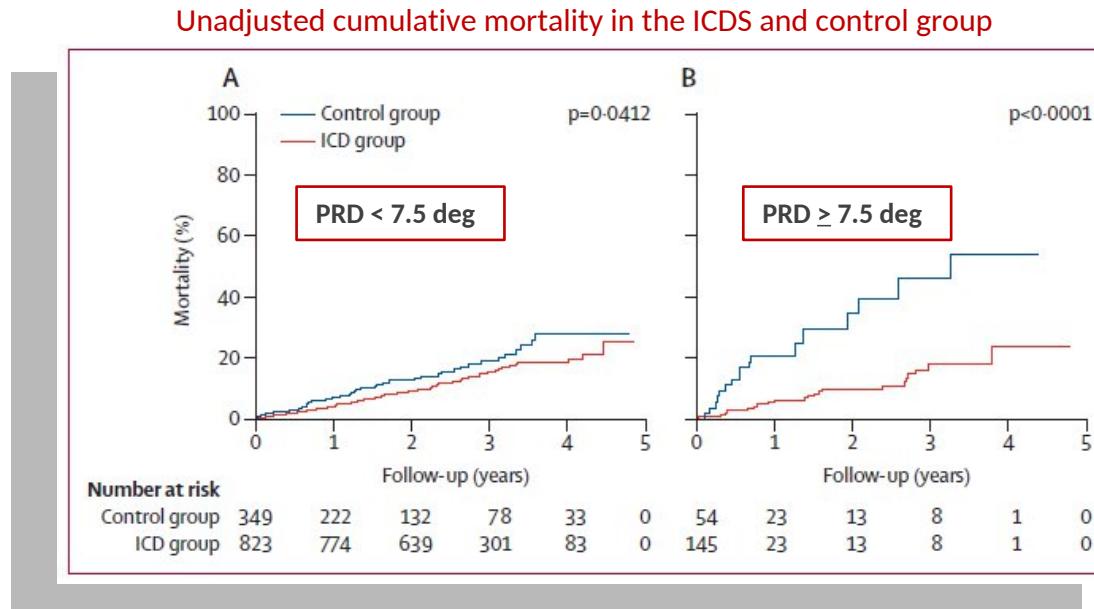
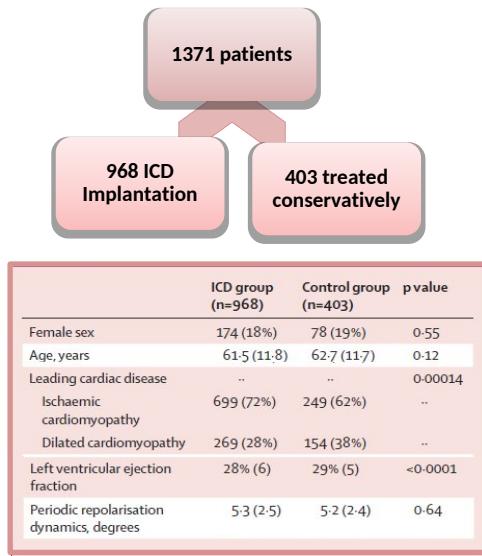


- PRD esplora le oscillazioni in bassa frequenza della ripolarizzazione cardiaca
- PRD indipendente dalla sottostante heart rate variability
- PRD indipendente dall'attività respiratoria

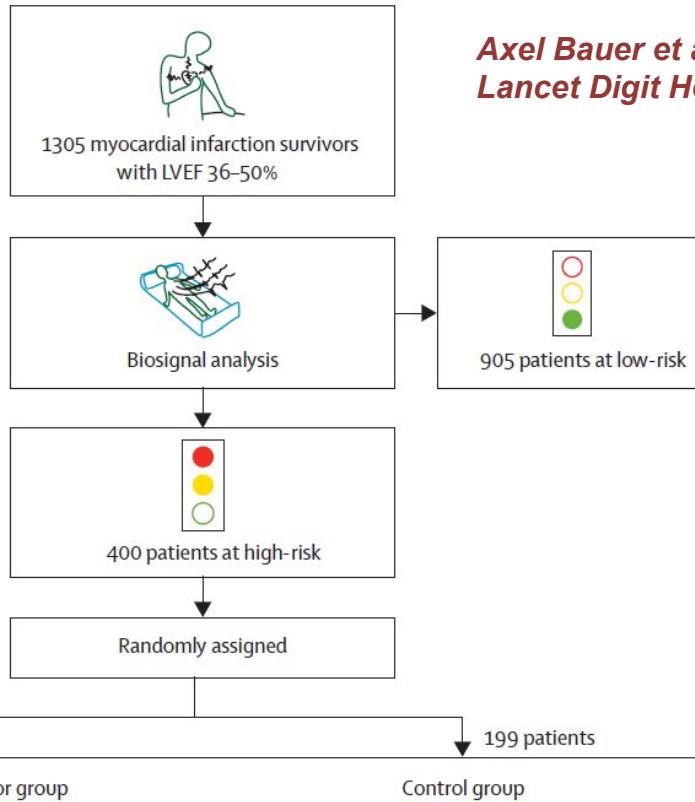
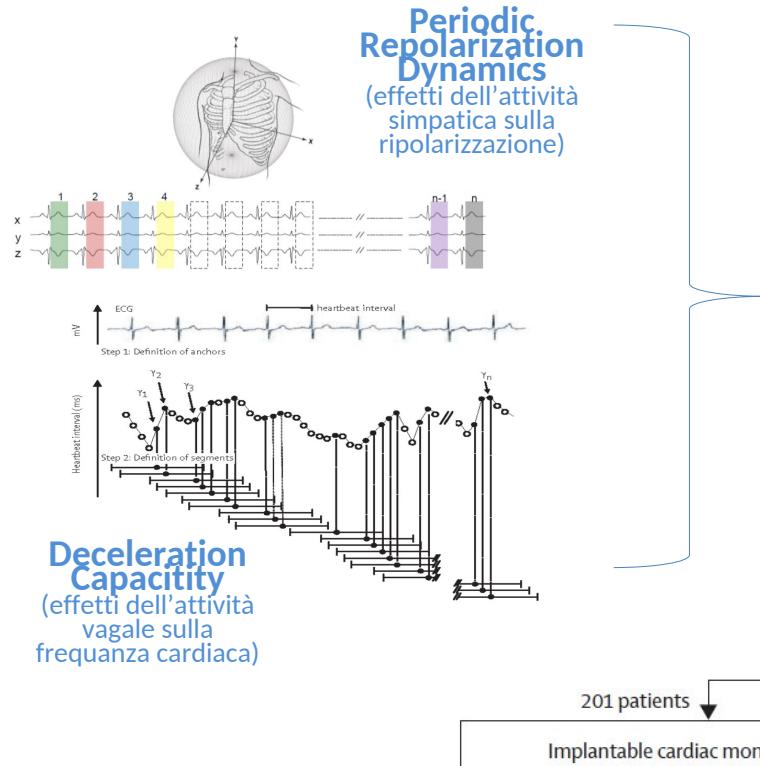


Prediction of mortality benefit based on periodic repolarisation dynamics in patients undergoing prophylactic implantation of a defibrillator: a prospective, controlled, multicentre cohort study

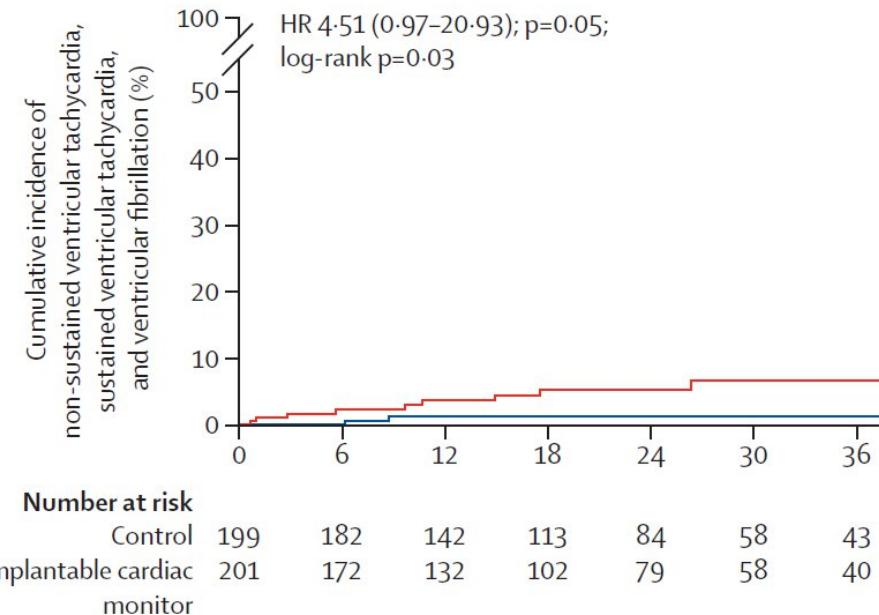
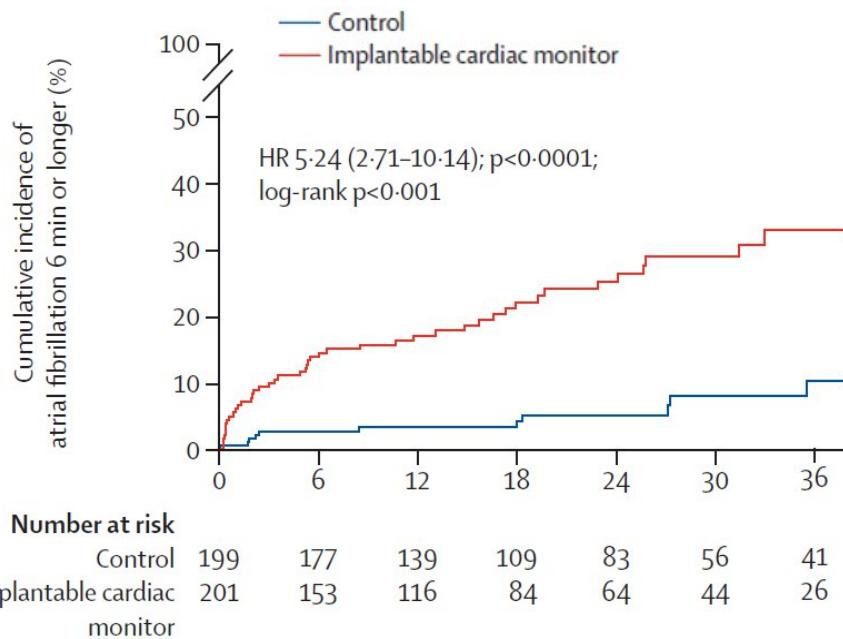
EU-CERT-ICD (EUropean Comparative Effectiveness Research to Assess the Use of Primary Prophylactic Implantable Cardioverter Defibrillators)



Telemedical cardiac risk assessment by implantable cardiac monitors in patients after myocardial infarction with autonomic dysfunction (SMART-MI-DZHK9): a prospective investigator-initiated, randomized, multicenter, open-label, diagnostic trial



Telemedical cardiac risk assessment by implantable cardiac monitors in patients after myocardial infarction with autonomic dysfunction (SMART-MI-DZHK9): a prospective investigator-initiated, randomized, multicenter, open-label, diagnostic trial





CONCLUSIONI

In pazienti con pregresso infarto miocardico e frazione di eiezione moderatamente depressa o preservata, markers di elettrofisiologia non invasiva possono essere utili per identificare sottogruppi a più elevato rischio aritmico.

Il beneficio dell'ICD in queste popolazioni deve essere tuttavia testato in trials randomizzati controllati.

