

# Risk Stratification for Life-Threatening Ventricular Tachyarrhythmias in Patients with Nonischemic Cardiomyopathy

Ido Goldenberg, MD, Arwa Younis, MD, David T. Huang, MD, Spencer Rosero, MD, Valentina Kutyifa, MD PhD, Scott McNitt, MS, Bronislava Polonsky, MS, Jonathan S. Steinberg, MD, Wojciech Zareba, MD, PhD, Mehmet K. Aktas, MD, MBA

Clinical Cardiovascular Research Center, University of Rochester Medical Center



## Background

The implantable cardioverter defibrillator is effective in reducing mortality among patients with heart failure (HF) due to ischemic heart disease.

More recent clinical trial data have called into question the benefit of an ICD in patients with HF due to non-ischemic cardiomyopathy (NICM).

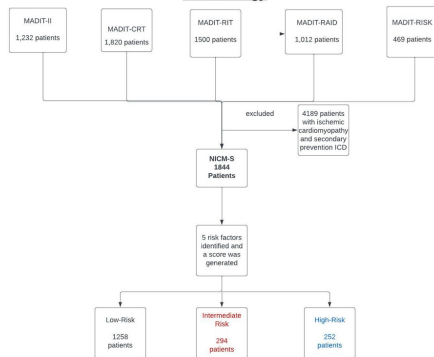
## Objectives

The purpose of this study was to develop a risk stratification score among patients with NICM receiving a primary prevention ICD.

## Patient population and Methods

The study population comprised of 1842 patients with NICM who were enrolled in our landmark ICD trials (MADIT CRT, MADIT-RIT, and RAID).

Figure 1: Study Population and Methodology



## Endpoints

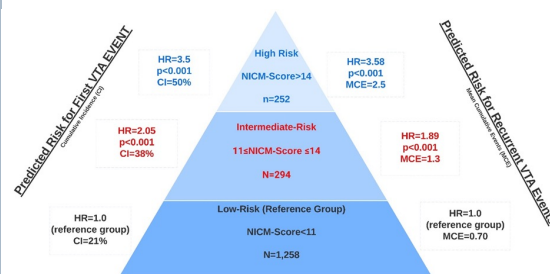
- Any VTA: ventricular tachycardia (VT)  $\geq 170$  bpm or ventricular fibrillation (VF)
- Fast VTA: ventricular tachycardia (VT)  $\geq 200$  bpm or ventricular fibrillation (VF)
- Appropriate Shock: Appropriate shock by the ICD device

## Results I.

### NICM Risk-Score Variables

Variable	Hazard Ratio	95% Confidence interval	P-Value	Points
Male	1.88	1.5 - 2.4	<.001	6
No CRT	1.40	1.1 - 1.7	0.002	3
History of NSVT	2.68	2.1 - 3.5	<.001	11
Black Race	1.61	1.3 - 2.1	<0.001	5
LVEF $\leq 25\%$	1.34	1.1 - 1.7	<0.001	3

### NICM-Score Predicts Risk of VTA

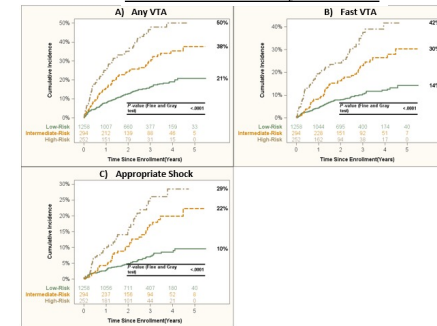


### Application of Risk Score for Prediction of First VTA Event

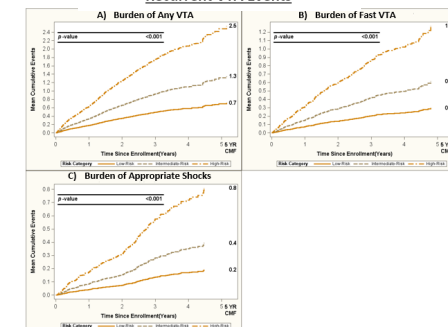
Endpoint	Group Comparison	Hazard Ratio	95% Confidence Interval	P-Value
A. Any VTA	Intermediate-Risk vs Low-Risk	2.05	1.6 - 2.7	<.0001
	High-Risk vs Low-Risk	3.34	2.6 - 4.3	<.0001
B. Fast VTA	Intermediate-Risk vs Low-Risk	2.30	1.7 - 3.2	<.0001
	High-Risk vs Low-Risk	3.72	2.7 - 5.1	<.0001
C. Appropriate Shock	Intermediate-Risk vs Low-Risk	2.30	1.6 - 3.4	<.0001
	High-Risk vs Low-Risk	3.02	2.1 - 4.4	<.0001

## Results II.

### Application of NICM-Risk Score for Prediction of First Arrhythmic Event



### Application of Risk-Score in Prediction of Recurrent VTA Events



## Conclusions

- Our findings suggest that patients with NICM who are ICD candidates experience a significant risk for VT/VF and a high burden of VT/VF during follow-up.
- Among patients with NICM exist subgroups who are at exceptionally high risk of VT/VF.
- We propose that those sub-groups can be identified using clinically relevant risk factors.
- Subsequently these patients can be managed with closer vigilance and intervened with more aggressive therapy for the prevention of ventricular arrhythmias including drugs and ablation procedures.