

CARDIOMIOPATIA ARITMOGENA: WHAT'S NEW?

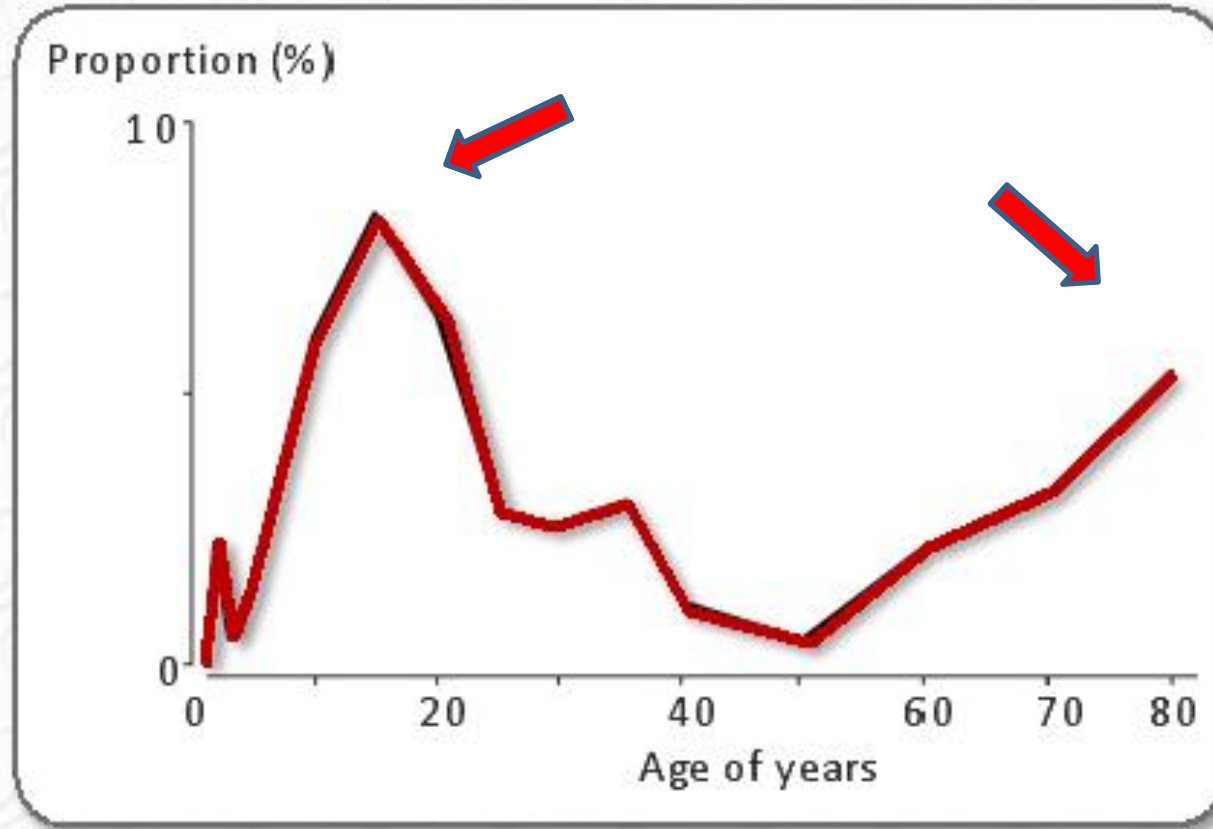
Cardiomiopatie a profilo aritmico,
dall'inquadramento clinico alla stratificazione del rischio:
quale ruolo per il loop?

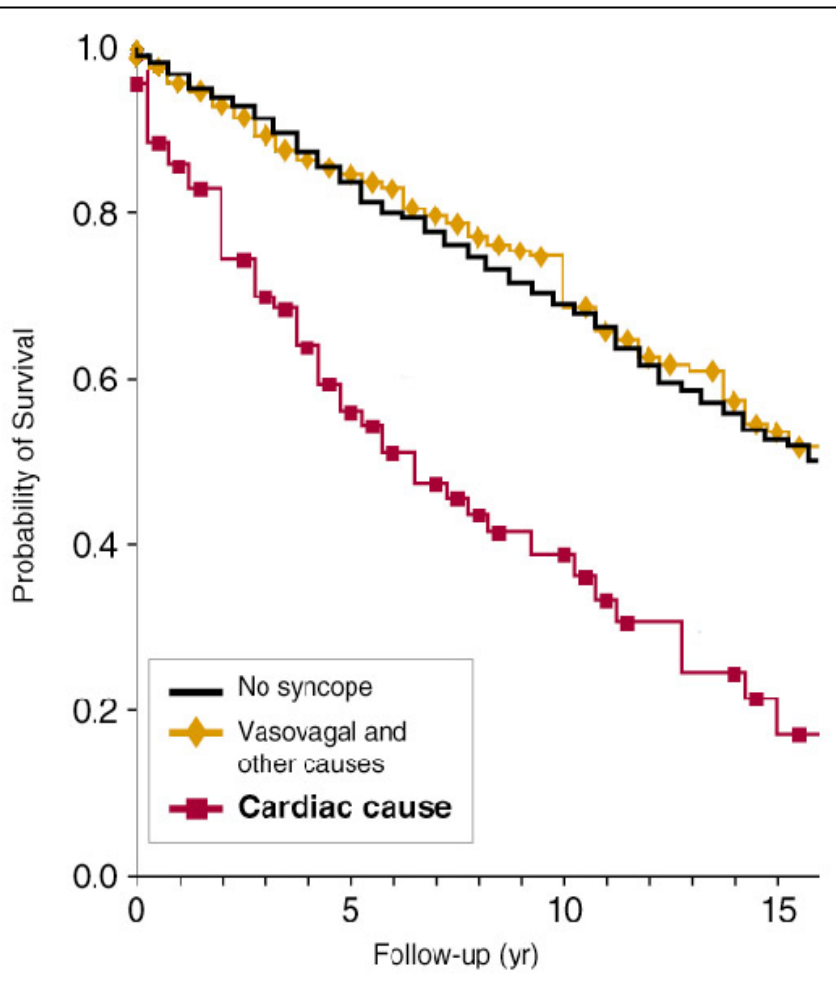
Pasquale Crea

Disclosures

Speaker fees from Abbott, Biotronik, Boston Scientific

SYNCOPE Epidemiology





Situazioni predisponenti alla sincope riflessa o neuromediata situazionale.

Stimolazione vie aeree	Bagno caldo
Apnea	Minzione
Pressione seni carotidei	Emicrania
Bevande fredde	Oculo-vagale
Tosse	Post-prandiale
Defecazione	Procedure mediche
Diving in apnea	Rasatura barba
Post-esercizio	Starnutire
Riflesso glossofaringeo	Stiramento
Pettinarsi	Deglutizione
Altitudine	Strumenti a fiato
Doccia calda	Manovra di Valsalva
Iperventilazione	Vomito
Vaccinazioni	Calo ponderale



EDITORIAL

Implantable loop recorder for syncope: essential tool or double-edged weapon?

Elisa EBRILLE ¹, Pasquale CREA ² *

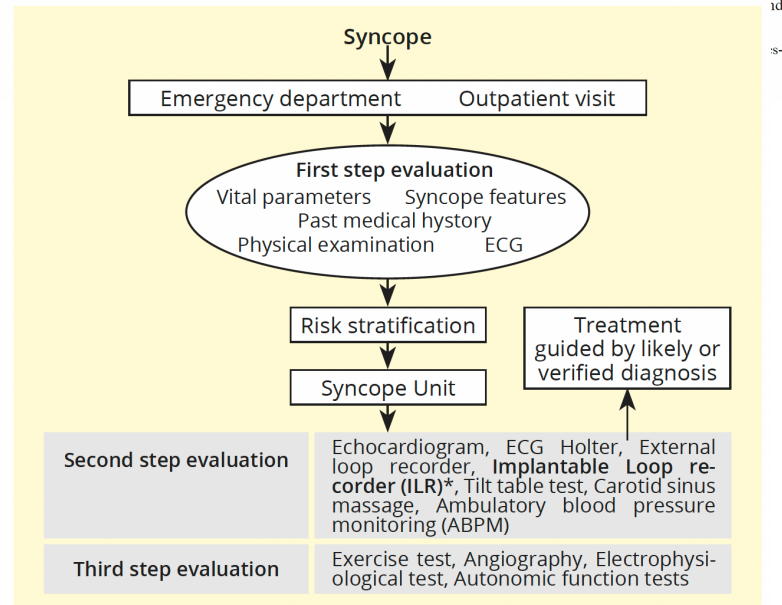


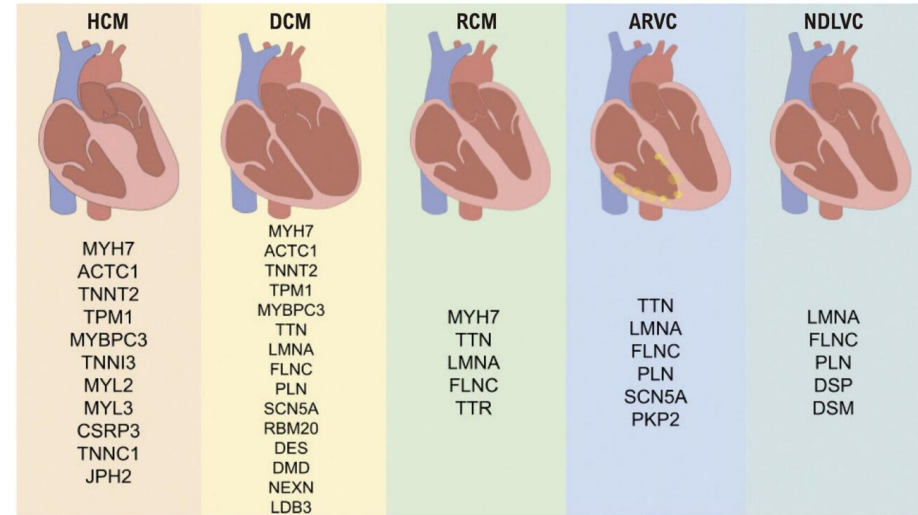
Figure 1.—Syncope: first-, second- and third-step evaluation.

*Cautionally in syncope with high-risk features.

Despite these undeniable advantages, ILR represents a diagnostic tool usually requiring a recurring clinical event. In the setting of unexplained syncope, we should always distinguish between provocative and monitoring tests. Provocative tests, such as carotid sinus massage, tilt table testing and electrophysiological test, aim to reveal an arrhythmic potential substrate in a protected environment, under strict medical control. Monitoring tests such as 24h ECG Holter recording or ILRs are usually performed in an out-of-hospital setting and they try to correlate a recurring event with rhythm disturbances. The so called “watch and wait” strategy might not be considered successful if the subsequent syncopal event leads to a tragic outcome.⁸ In selected groups of patients with known intraventricular conduction disease or left ventricular dysfunction, a syncopal event can be considered as a marker of poor prognosis. Empiric implantation of a permanent pacemaker or a cardioverter defibrillator, justified by recent guidelines, could be lifesaving.⁵ We should al-

Long Term Continuous Monitoring in Cardiomyopathies

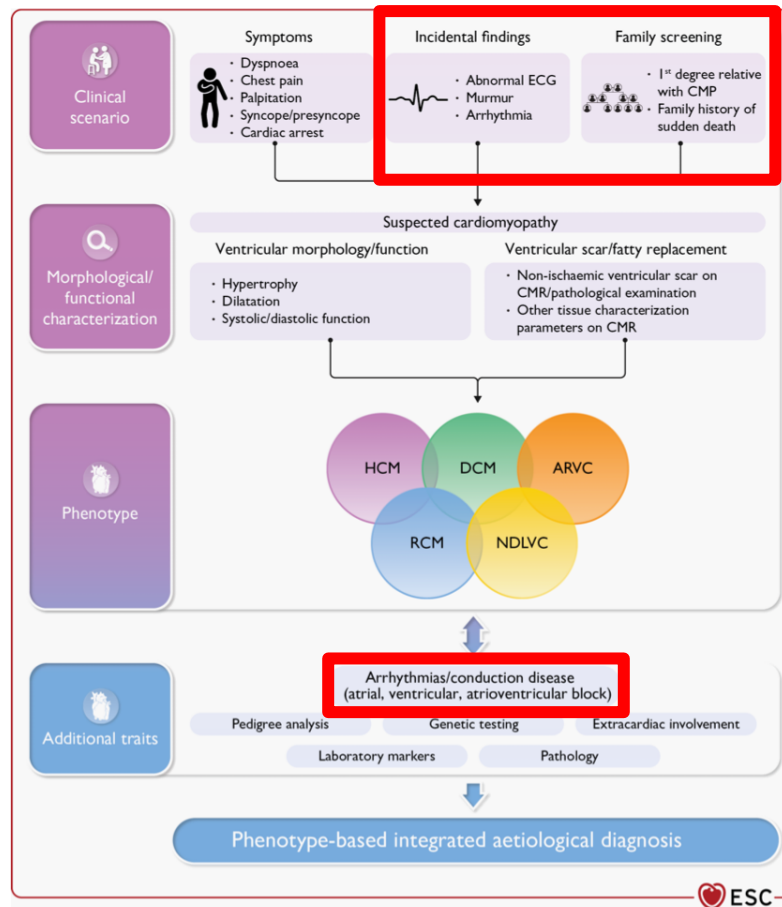
- Palpitations
- Unexplained Syncope
- Ablation/Antiarrhythmics efficacy
- Cryptogenic Stroke
- Asymptomatic arrhythmias



Key epidemiological metrics in adults and children for the different cardiomyopathy phenotypes

Cardiomyopathy phenotype	Adults	Children
HCM	Prevalence: 0.2%	Childhood incidence: 0.002–0.005% Childhood prevalence: 0.029%
DCM	Prevalence: 0.036–0.400%	Childhood incidence: 0.003–0.006% Childhood prevalence: 0.026% Infantile incidence: 0.038–0.046%
NDLVC	To be determined	To be determined
ARVC	Prevalence: 0.078%	Very rare in infancy and early childhood; to be determined in older children and adolescents
RCM	Rare	Childhood incidence: 0.0003%

Figure 2
Clinical diagnostic
workflow of
cardiomyopathy



Recommendations for implantable cardioverter defibrillator in patients with cardiomyopathy (3)

Recommendations (continued)

Class	Level
-------	-------

Primary prevention

Comprehensive SCD risk stratification is recommended in all cardiomyopathy patients who have not suffered a previous cardiac arrest/sustained ventricular arrhythmia at initial evaluation and at 1–2 year intervals, or whenever there is a change in clinical status.

I	C
---	---

The use of validated SCD algorithms/scores as aids to the shared decision-making when offering ICD implantation, where available:

- is recommended in patients with HCM.
- should be considered in patients with DCM, NDLVC, and ARVC.

I	B
Ila	B
Ila	C

If a patient with cardiomyopathy requires pacemaker implantation, comprehensive SCD risk stratification to evaluate the need for ICD implantation should be considered.

Recommendations for implantable cardioverter defibrillator in patients with cardiomyopathy (3)

Recommendations (continued)

Class	Level
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I	B
Ila	B
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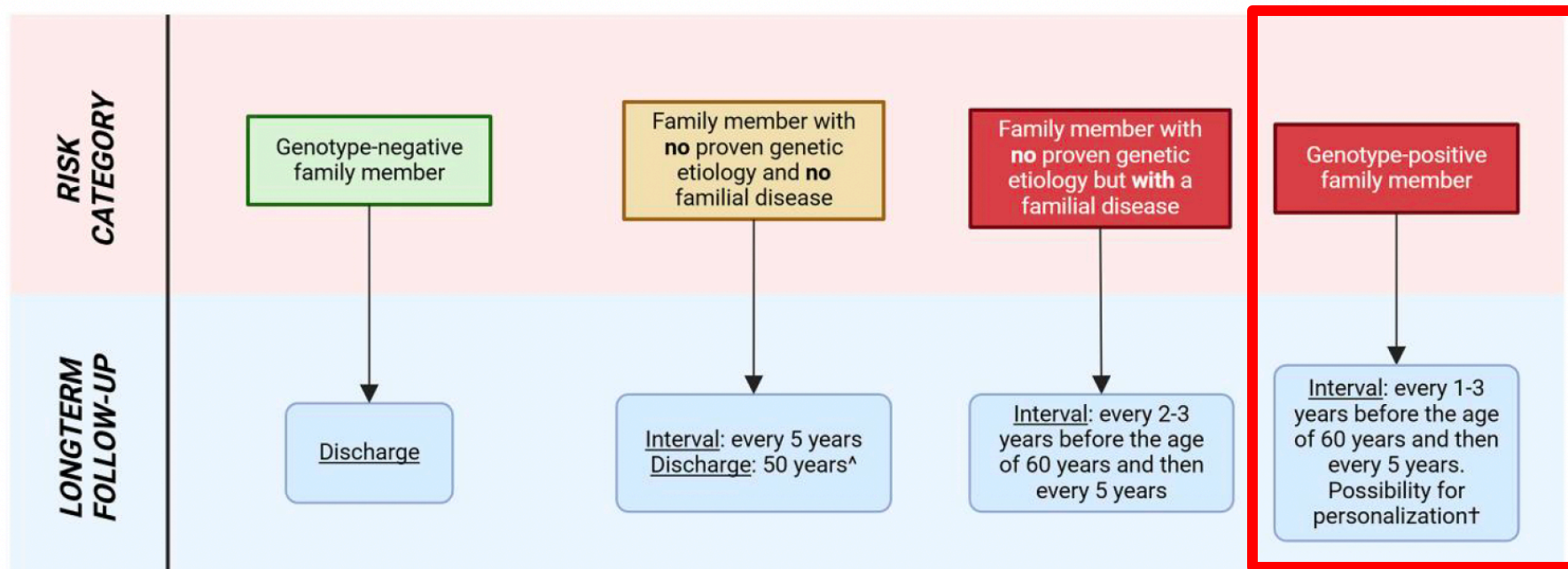
If a patient with cardiomyopathy requires pacemaker implantation, comprehensive SCD risk stratification to evaluate the need for ICD implantation should be considered.

Ruolo del loop recorder con durata prolungata nelle cardiomiopatie

- **Stratificazione del rischio** di sudden death nel paziente asintomatico dal momento della diagnosi genetica
- **Terapia anticoagulante** nel paziente con HCM o amiloidosi
- **Monitoraggio efficace del primo evento** (e trattamento del secondo) in pazienti con cardiomiopatie

Clinical care of family members of patients with dilated cardiomyopathy

A clinical consensus statement of the Heart Failure Association of the European Society of Cardiology, the European Society of Cardiology Working Group on Myocardial & Pericardial Diseases, and the European Society of Cardiology Council on Cardiovascular Genomics



Concealed

Electrical Stage

Structural Stage

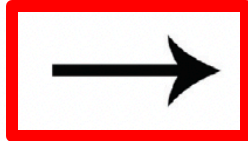
Number of
Patients



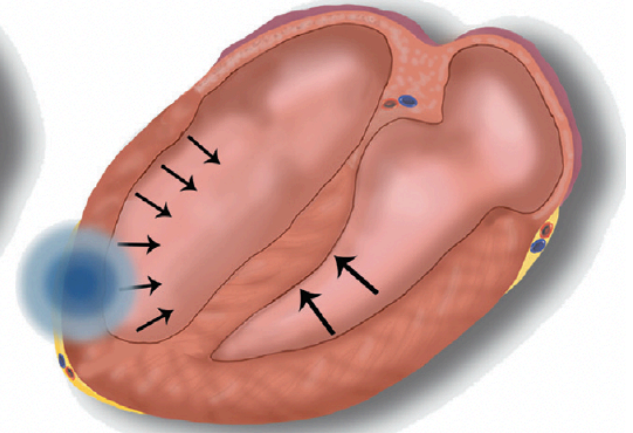
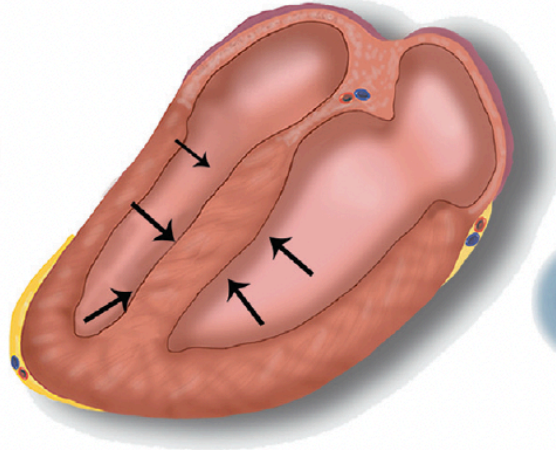
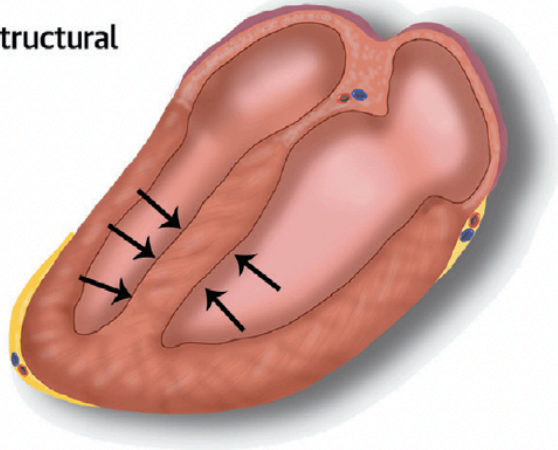
ECG



Holter
Monitor



Structural



HCM Risk-SCD Calculator

Age Years

Age at evaluation

Maximum LV wall thickness mm

Transthoracic Echocardiographic measurement

Left atrial size mm

Left atrial diameter determined by M-Mode or 2D echocardiography in the parasternal long axis plane at time of evaluation

Max LVOT gradient mmHg

The maximum LV outflow gradient determined at rest and with Valsalva provocation (irrespective of concurrent medical treatment) using pulsed and continuous wave Doppler from the apical three and five chamber views. Peak outflow tract gradients should be determined using the modified Bernoulli equation: $\text{Gradient} = 4V^2$, where V is the peak aortic outflow velocity

Family History of SCD ☐ No ☐ Yes

History of sudden cardiac death in 1 or more first degree relatives under 40 years of age or SCD in a first degree relative with confirmed HCM at any age (post or ante-mortem diagnosis).

Non-sustained VT ☐ No ☐ Yes

3 consecutive ventricular beats at a rate of 120 beats per minute and <30s in duration on Holter monitoring (minimum duration 24 hours) at or prior to evaluation.

Unexplained syncope ☐ No ☐ Yes

History of unexplained syncope at or prior to evaluation.

Risk of SCD at 5 years (%):

ESC recommendation:

Reset

ARVC Risk Calculator v3.0

The Arrhythmogenic Right Ventricular Cardiomyopathies (ARVC) Risk Calculator estimates the risk of ventricular arrhythmias (VA) within 5 years for patients with a *definite* ARVC diagnosis. Please read all definitions below carefully, as well as our general [disclaimer](#), to avoid invalid interpretation of results.

This calculator provides 1-, 2- or 5-year risk estimations for:

Primary prevention patients only, i.e. those without prior sustained VA:

- Risk of the *first* sustained VA (including all types)*
- Risk of the *first* sustained VA, adjusted for programmed ventricular stimulation (PVS) results

All patients with definite ARVC:

- Risk of *fast* sustained VA (only ventricular tachycardia (VT) >250bpm; ventricular fibrillation/flutter (VF); sudden cardiac arrest/death (SCA/SCD))

*[External validation studies](#) available

NB: ALL FIELDS BELOW must be filled in, any missing value will render the calculation invalid.

Age at diagnosis

Age at which the patient fulfilled ARVC diagnosis as per 2010 Task Force Criteria (Marcus et al. 2010)

Sex

☐ Male

☐ Female

Cardiac syncope (< 6 months)

☐ Yes

☐ No

Syncope suspected to be caused by cardiac arrhythmia within 6 months prior to diagnosis.

Number of inverted T-waves



0

Total number of precordial and inferior leads with inverted T-waves on standard 12-lead ECG.

Maximum 24 hours PVC count

Maximum number of PVCs in 24 hours registered by continuous ECG monitoring (e.g. Holter)

History of non-sustained VT

☐ Yes

☐ No

Specified as a recorded ventricular tachycardia (>100bpm) ending spontaneously within 30 seconds.

Right ventricular ejection fraction (%)



50

As measured by cardiac MRI.

PATIENTS WITHOUT PRIOR SUSTAINED VA

i.e. primary prevention

LMNA-risk VTA calculator

Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies

Sex

☐ Male ☐ Female

Non-missense
LMNA mutation

☐ Yes ☐ No

Non-missense mutations include insertions, deletions, truncating mutations or mutations affecting splicing

Atrio-ventricular
block

☐ Absent ☐ 1st degree ☐ High degree

Please select the highest degree. 1st degree AV block corresponds to ≥ 0.20 sec PR interval and high degree AV block to type II 2nd degree or 3rd degree (and not type I 2nd degree)

Non-sustained
ventricular
tachycardia

☐ Yes ☐ No

NSVT corresponds to ≥ 3 consecutive ventricular complexes at a rate ≥ 120 bpm on 24-h ambulatory electrocardiographic monitoring

Left ventricular
ejection fraction

%

Left ventricular ejection fraction measurement derived from echocardiogram

Risk of Life-Threatening Ventricular Tachyarrhythmias at 5 years

___ %

[Reset](#)



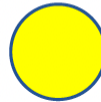
Diagnosis and Management of Rare Cardiomyopathies in Adult and Paediatric Patients. A Position Paper of the Italian Society of Cardiology (SIC) and Italian Society of Paediatric Cardiology (SICP)

Giuseppe Limongelli^{a,b,*}, Rachele Adorisio^c, Chiara Baggio^d, Barbara Baucé^{b,e}, Elena Biagini^{b,f}, Silvia Castelletti^g, Silvia Favilli^h, Massimo Imazioⁱ, Michele Lioncino^a, Marco Merlo^{b,d}, Emanuele Monda^a, Iacopo Olivetto^j, Vanda Parisi^f, Francesco Pelliccia^k, Cristina Basso^{b,l}, Gianfranco Sinagra^{b,d}, Ciro Indolfi^m, Camillo Autoreⁿ, on behalf of WG on Cardiomyopathies of SIC (Società Italiana di Cardiologia), on behalf of WG on Cardiomyopathies of SICPed (Società Italiana di Cardiologia Pediatrica)

Recommendations for the diagnosis and management of infant and paediatric onset HCM

Symbol

In selected patients with palpitations, personal history of syncope or risk factors for sudden AV block, and in individuals affected by KSS, 7-days Holter monitoring, implantable loop recorder devices or electrophysiological study may be considered.



Recommendations for diagnosis and management of patients with DCM

Symbol

Neuromuscular diseases

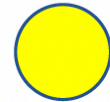
In patients with clinically suspected Duchenne or Becker's dystrophy cardiovascular evaluation should be performed at diagnosis and on annual basis, starting from the age of 10. Cardiovascular assessment is recommended every 2 years in asymptomatic children <10 years.



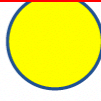
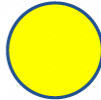
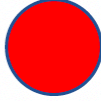
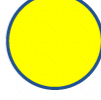
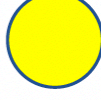
Comprehensive genetic test (comprehensive of *PLN*, *SCN5A*, *LMNA*, *EMD*, *LGMD1B*, *MD1* gene testing/sequencing) and neuromuscular evaluation is recommended in presence of family history of DCM associated with SCD, progressive AVB, or premature atrial fibrillation.



In patients with limb-girdle muscle dystrophy, myofibrillar myopathy and myotonic dystrophy, 48 h Holter monitoring, loop recorder ECG monitoring should be considered for the assessment of symptomatic palpitations.



Recommendations for the diagnosis and management of ACM are listed below.

Recommendations for the diagnosis and management of ACM	Symbol
In children and adolescents with family history for ACM and carriers of a pathogenic/likely pathogenic variant, regular annual follow-up, comprehensive of 12 lead ECG, echocardiogram and 24 h Holter monitoring are recommended.	
Genetic test (comprehensive or desmosomal gene testing/sequencing): - should be considered in patients with myocarditis and positive family history (ACM); - may be considered in patients with recurrent myocarditis.	
Restriction from competitive sports activity may be considered in phenotype-negative genotype positive children and adults and/or in case of unknown genetic test results.	
Prophylactic administration of beta blockers is not recommended in phenotype-negative children and adults carrying a pathogenic/likely pathogenic variant for ACM.	
In patients with ACM and premature ventricular complexes/nonsustained VT, beta blockers titrated to the maximum tolerated dose are recommended.	
In individuals with phospholamban cardiomyopathy, and LVEF less than 45% or evidence of nonsustained VT, an ICD is reasonable.	
In individuals with lamin A/C ACM and two or more risk factors among LVEF <45%, NSVT and male sex, an ICD with pacing capabilities should be considered.	
In individuals with FLNC ACM and an LVEF <45%, an ICD should be considered.	

Implantable loop recorder monitoring in inherited cardiomyopathies: yield of clinically relevant arrhythmias

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²Istituti Clinici Scientifici Maugeri IRCCS, Pavia, Italy

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Background: Implantable loop recorders (ILRs) are a minimally invasive tool for the diagnosis of arrhythmias in patients with unexplained syncope or asymptomatic arrhythmias. Their use in patients with inherited arrhythmia syndromes has been recommended in the recent 2022 ESC Guidelines (1). However, the clinical utility of ILRs in patients with inherited cardiomyopathies remains unexplored.

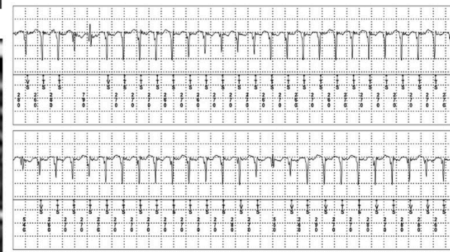
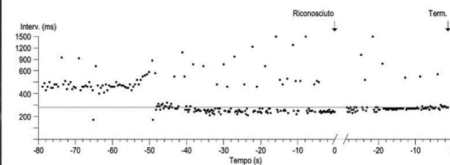
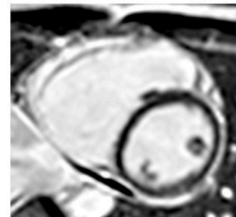
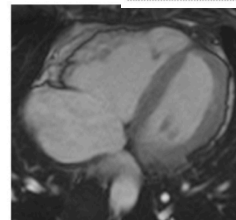
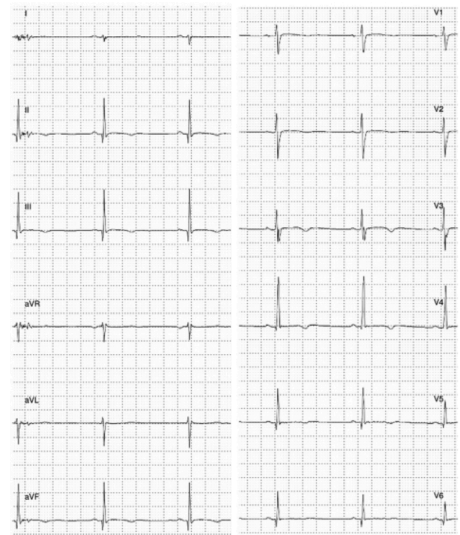
Purpose: The purpose of this study was to evaluate the yield of ILR monitoring in detecting clinically relevant events in a single cohort of patients with inherited cardiomyopathies.

Methods: We prospectively collected demographic, clinical, and follow-up data from patients with inherited cardiomyopathies (Arrhythmogenic Cardiomyopathy, ACM; Hypertrophic Cardiomyopathy, HCM; Dilated Cardiomyopathy, DCM; Left Ventricular Non-Compaction, LVNC) who were implanted with an ILR and were followed with telemedicine. The primary endpoint was a clinically significant event recorded with the ILR that required an update to an implantable cardioverter defibrillator (ICD).

Results: The study cohort included 53 consecutive patients (55% males; mean age at ILR implantation 35 ± 14 years) with inherited cardiomyopathies: 33/53 (62%) with ACM, 9/53 (17%) with HCM, 7/53 (13%) LVNC, 4/33 (8%) DCM. None of the patients implanted had previously experienced life-threatening arrhythmias. During a median follow-up of 2.6 years (IQR 1.4-3.7 years) after ILR implantation, clinically relevant arrhythmic events were documented in 9/53 (17%) of patients. Specifically, sustained or non-sustained ventricular tachycardia episodes were detected in 8 patients (5 with ACM, 2 with LVNC, 1 with LMNA-related DCM), whereas one patient with HCM showed symptomatic pauses > 3 seconds due to sick sinus syndrome. In all cases, the detection of such episodes led to the upgrade to ICD implantation.

Conclusions: ILR monitoring of patients with inherited cardiomyopathies identified clinically relevant events in almost one-fifth of patients, suggesting that the use of ILR may substantially improve the management of these patients.

Figure 1. Representative example of clinically actionable event detected by implantable loop recorder (ILR) in a patient with inherited cardiomyopathy. The patient, a 19-year-old male with a definitive diagnosis of Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) and a pathogenic PKP2 truncating variant, presented with palpitations and vertigo during physical exertion one year after the implantation of an ILR. ILR monitoring documented a rapid tachycardia with a mean frequency of 250 bpm lasting 3 minutes, prompting an indication for an implantable cardioverter defibrillator (ICD).



Original Article

Long-term Monitoring to Detect Risk of Sudden Cardiac Death in Inherited Arrhythmia Patients

Guillaume Domain, MD,^{a,†} Christian Steinberg, MD,^{a,†} Brianna Davies, MD,^b Camille Strubé, MD,^a Jason D. Roberts, MD,^c Chris Simpson, MD,^d and Andrew Krahn, MD^b

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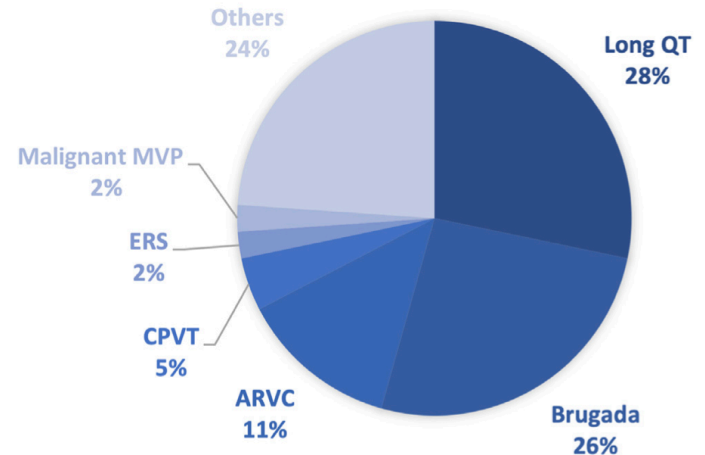
ABSTRACT

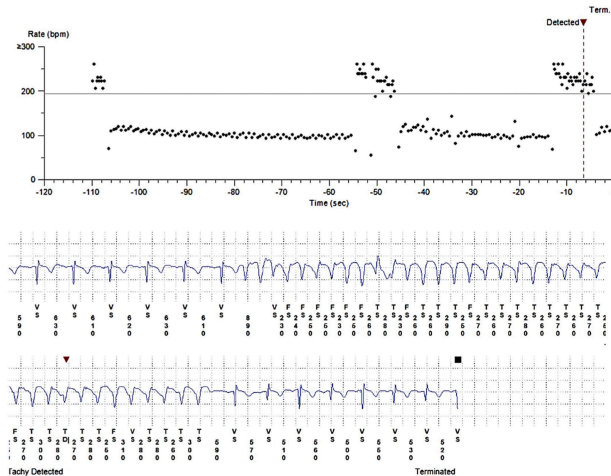
Background: Risk stratification in inherited arrhythmia syndromes is challenging. Implantable cardioverter defibrillators (ICDs) are effective in the prevention of sudden cardiac death but are associated with significant complications. We aimed to determine the value of long-term implantable loop recorder (ILR) monitoring to determine risk factors for arrhythmias in inherited arrhythmia patients.

Methods: We conducted a prospective multicentre study between 2015 and 2020 recruiting inherited arrhythmia probands and family

RÉSUMÉ

Contexte : La stratification des risques en présence de syndromes associés aux arythmies héréditaires est une entreprise complexe. Les défibrillateurs cardioverters implantables (DCI) sont efficaces pour prévenir la mort subite d'origine cardiaque, mais sont associés à des complications importantes. Nous avons tâché d'établir l'intérêt de la surveillance à long terme à l'aide d'un moniteur ECG implantable (MEI) pour déterminer les facteurs de risque associés aux arythmies chez les patients présentant une arythmie héréditaire.





Ruolo del loop recorder con durata prolungata nelle cardiomiopatie

- **Stratificazione del rischio** di sudden death nel paziente asintomatico dal momento della diagnosi genetica
- **Terapia anticoagulante** nel paziente con HCM o amiloidosi
- **Monitoraggio efficace del primo evento** (e trattamento del secondo) in pazienti con cardiomiopatie

Recommendations for management of atrial fibrillation and atrial flutter in patients with cardiomyopathy (1)



Recommendations	Class	Level
<i>Anticoagulation</i>		
Oral anticoagulation in order to reduce the risk of stroke and thromboembolic events is recommended in all patients with HCM or cardiac amyloidosis and AF or atrial flutter (unless contraindicated).	I	B
Oral anticoagulation to reduce the risk of stroke and thromboembolic events is recommended in patients with DCM, NDLVC, or ARVC, and AF or atrial flutter with a CHA ₂ DS ₂ -VASc score ≥ 2 in men or ≥ 3 in women.	I	B
Oral anticoagulation to reduce the risk of stroke and thromboembolic events should be considered in patients with RCM and AF or atrial flutter (unless contraindicated).	IIa	C
Oral anticoagulation to reduce the risk of stroke and thromboembolic events should be considered in patients with DCM, NDLVC, or ARVC, and AF or atrial flutter with a CHA ₂ DS ₂ -VASc score of 1 in men or of 2 in women.	IIa	B

Atrial fibrillation burden and management in cardiomyopathies (1)

Condition	AF epidemiology		Anticoagulation	AF management		
	Prevalence	Annual incidence		Long-term rate control	Long-term rhythm control	
HCM	17–39%	2.8–4.8%	Always (if no contraindication)	Beta-blockers (preferred) Verapamil or diltiazem (only if preserved LVEF) Digoxin AV node ablation + CRT or physiological pacing	Rhythm control is preferred Amiodarone, dofetilide, disopyramide, sotalol, dronedarone	Ablation

Review

Electrocardiographic Patterns and Arrhythmias in Cardiac Amyloidosis: From Diagnosis to Therapeutic Management—A Narrative Review

Lucio Teresi ^{1,2,*}, Giancarlo Trimarchi ^{1,3}, Paolo Liotta ¹, Davide Restelli ¹, Roberto Licordari ¹, Gabriele Carciotto ¹, Costa Francesco ^{1,4}, Pasquale Crea ¹, Giuseppe Dattilo ¹, Antonio Micari ⁵, Michele Emdin ^{3,6}, Antonio Berrueto ² and Gianluca Di Bella ¹

Bradyarrhythmias

Conduction system damage

	N	I Degree AV Block				II Degree AV Block			
		AL	ATTRv	ATTRwt	AL + ATTR	AL	ATTRv	ATTRwt	AL + ATTR
Murtagh B, et al. (2005) [27]	127	-	-	-	21	-	-	-	1
Rapezzi C et al. (2009) [29]	233	18	25	33	-	-	-	-	-
Dungu J et al. (2012) [18]	64	-	56	-	-	-	-	-	-
Boldrini M et al. (2013) [82]	344	15	-	-	-	-	-	-	-
Cheng Z et al. (2013) [23]	276	-	-	-	13	-	-	-	-
Finocchiaro G et al. (2013) [30]	48	-	-	-	21	-	-	-	-
Perlini S et al. (2013) [31]	375	25	-	-	-	-	-	-	-
Rapezzi C et al. (2013) [15]	186	-	13	30	-	-	-	-	-
Cyrille NB et al. (2014) [17]	200	26	33	45	0	10	10	-	-
Di Bella G et al. (2015) [24]	35	-	-	-	-	-	-	-	-
Cariou E et al. (2017) [32]	114	-	-	-	-	-	-	-	-
Gonzalez-Lopez E et al. (2017) [19]	149	-	-	31	-	-	-	-	-
Cappelli F et al. (2020) [14]	244	13	41	26	-	-	-	-	-
Donnellan E et al. (2020) [47]	369	-	43	49	-	7	10	-	-
Löfbacka V et al. (2021) [20]	33	-	-	24	-	-	-	-	-
Guo X et al. (2021) [33]	99	-	-	-	-	-	-	-	-
Sharma S et al. (2021) [22]	71	-	-	-	-	-	-	-	-
Cipriani A et al. (2022) [13]	411	22	-	48	-	-	-	-	-
Pericet-Rodriguez C et al. (2022) [34]	58	-	-	-	32	-	-	-	-

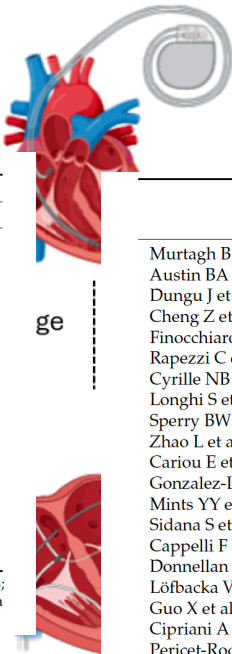
N = number of patients in the study. Other data are reported as percentages. AL, light chain amyloidosis; ATTR, transthyretin amyloidosis; ATTRv, variant transthyretin amyloidosis; ATTRwt, wild-type transthyretin amyloidosis.

Tachyarrhythmias

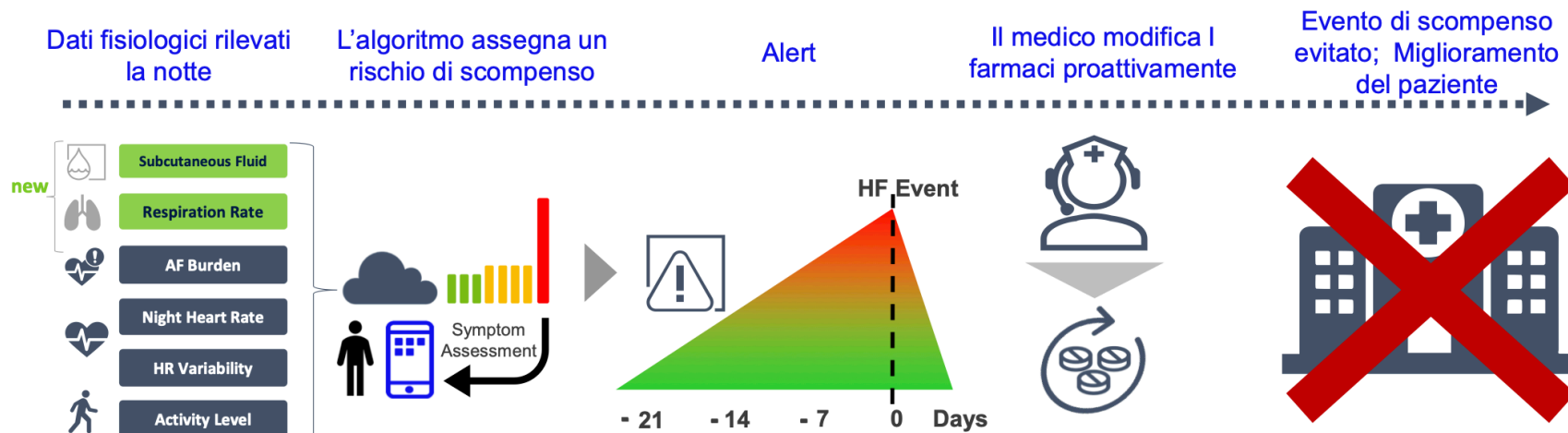
Supraventricular: AF

	N	Atrial Fibrillation			
		AL	ATTRwt	ATTRv	AL + ATTR
Murtagh B et al. (2005) [27]	127	-	-	-	10
Austin BA et al. (2009) [28]	45	-	-	-	18
Dungu J et al. (2012) [18]	64	-	-	-	69
Cheng Z et al. (2013) [23]	276	-	-	-	16
Finocchiaro G et al. (2013) [30]	48	-	-	-	25
Rapezzi C et al. (2013) [44]	186	-	37	29	-
Cyrille NB et al. (2014) [17]	200	6	38	17	-
Longhi S et al. (2015) [28]	262	9	38	11	-
Sperry BW et al. (2016) [21]	389	32	75	24	-
Zhao L et al. (2016) [11]	110	12	-	-	-
Cariou E et al. (2017) [32]	114	-	-	-	28
Gonzalez-Lopez E et al. (2017) [19]	149	-	56	-	-
Mints YY et al. (2018) [45]	146	-	70	-	-
Sidana S et al. (2019) [46]	239	14	-	-	-
Cappelli F et al. (2020) [14]	244	6	40	20	-
Donnellan E et al. (2020) [47]	369	-	33	13	-
Löfbacka V. et al. (2021) [20]	33	-	-	33	-
Guo X et al. (2021) [33]	99	24	-	-	-
Cipriani A et al. (2022) [13]	411	14	-	32	-
Pericet-Rodriguez C et al. (2022) [34]	58	36	-	-	-
Russo D et al. (2023) [48]	64	-	-	23	-
Fumagalli C et al. (2023) [49]	266	-	78	-	-

N = number of patients in the study. Other data are reported as percentages. AL, light chain amyloidosis; ATTR, transthyretin amyloidosis; ATTRv, variant transthyretin amyloidosis; ATTRwt, wild-type transthyretin amyloidosis.



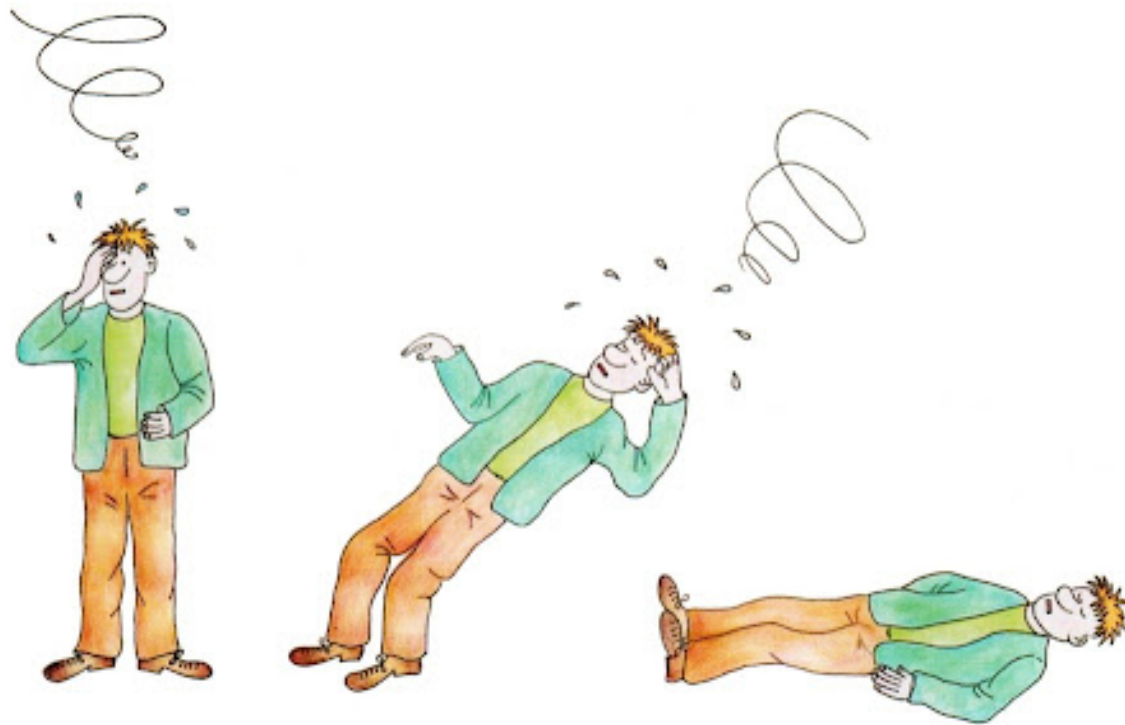
Scompenso



Ruolo del loop recorder con durata prolungata nelle cardiomiopatie

- **Stratificazione del rischio** di sudden death nel paziente asintomatico dal momento della diagnosi genetica
- **Terapia anticoagulante** nel paziente con HCM o amiloidosi
- **Monitoraggio efficace del primo evento** (e trattamento del secondo) in pazienti con cardiomiopatie

Quando l'asintomatico diventa sintomatico



Real-world battery longevity of implantable loop recorders
implanted for unexplained syncope: Results from a large
single-center registry

Lukas Duvillier MD | Anthony Demolder MD | Sally Van Renterghem RN |
Caroline De Mey RN | Filip West RN | Jan De Pooter MD, PhD

	Mdt				
	Reveal		Confirm		BioMonitor 2
	XT 9529	Linq II	ICM 2102	Rx DM 3500	
Number of patients	69	139	75	16	10
Manufacturer reported battery longevity	3 years	4.5 Y	Min. 2 years	Min. 2 years	Min. 4 years
Real-life ILR battery longevity (months)	42 [38-45]	43 [41-44]	43 [40-45]	25 [24-36]	72
Range of ILR battery longevity (months)	28 - 61	36 - 51	24 - 51	24 - 41	72
Number of ILR reached EOL	35	86	38	15	1
Size (mm)	62x19x8	45x7x4	56x19x8	49x9x3	88x15x7
Mass	15 g	2.5 g	12 g	3 g	10.1 g

Bsc



3 Y

Btk



5 Y

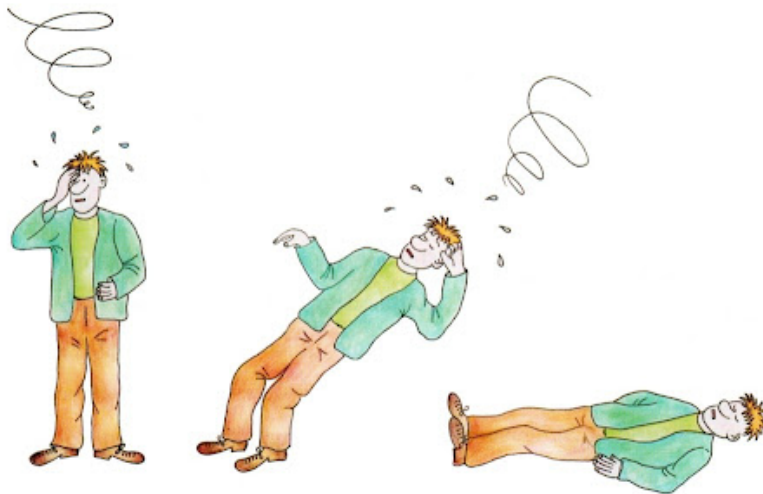
Abbott



3+

EL 6+ Y

Quando l'asintomatico diventa sintomatico



Diagnosticare il primo evento significa curare il secondo

Messaggi nella bottiglia



- Il **loop recorder** è **uno strumento diagnostico** fondamentale ma non terapeutico.
- E' indicabile in pazienti con cardiomiopatia in fase di stratificazione del rischio aritmico.
- In alcune cardiomiopatie (HCM, amiloidosi) può essere utile per adeguamenti terapeutici (scompenso, NAO).
- **Il loop recorder può avere un ruolo nel monitoraggio efficace del primo evento (e trattamento del secondo) in particolare nelle prime fasi post-diagnosi e in età pediatrica** in pazienti con cardiomiopatie