LA SINCOPE

Paolo Pinna Parpaglia

Sassari

SINCOPE

perdita transitoria di coscienza causata

da una ipoperfusione cerebrale globale

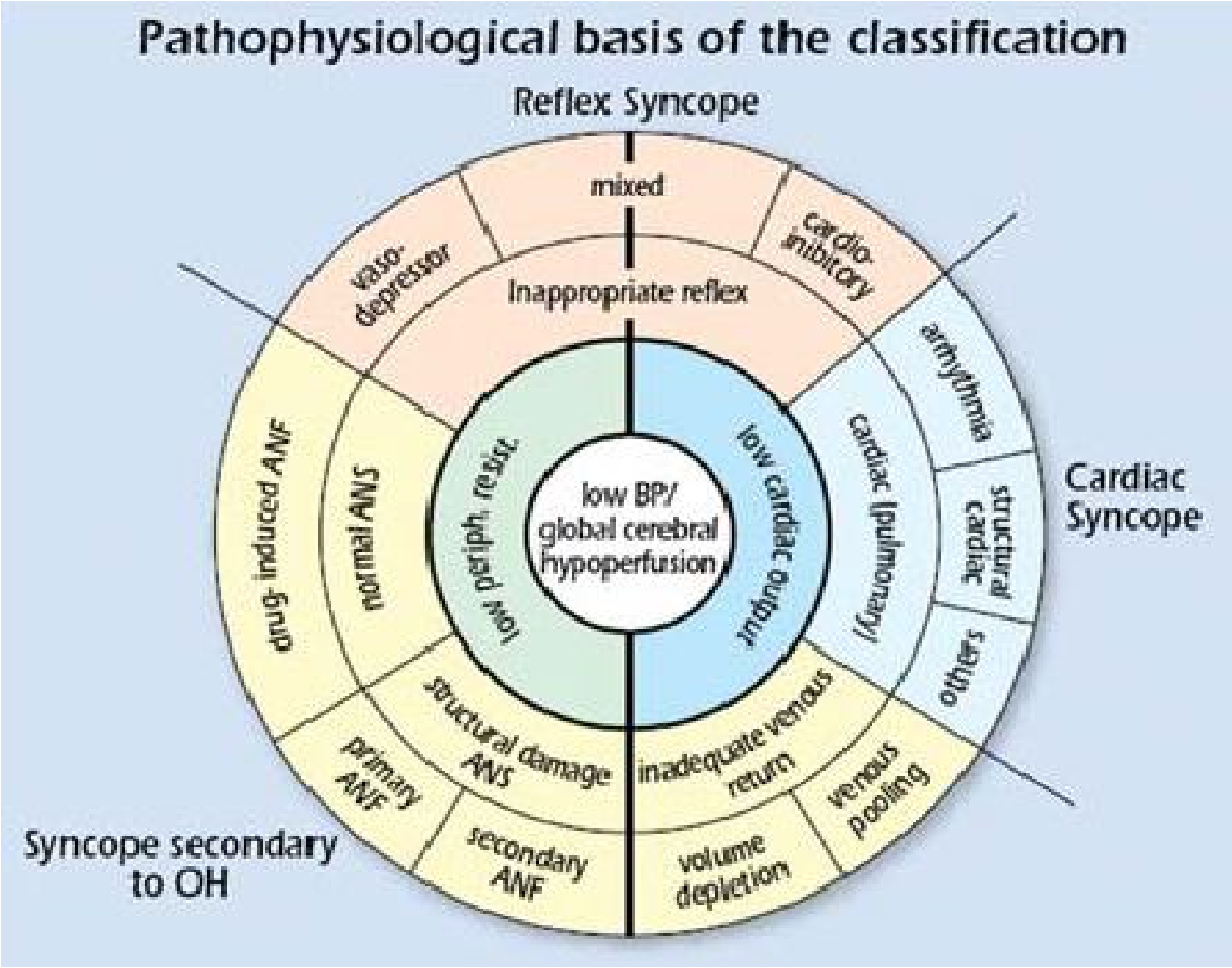
e caratterizzata da:

- *rapida insorgenza*
- *breve durata*
- *recupero completo e spontaneo*

ESC GUIDELINES

EUROPEAN SOCIETY OF CARDIOLOGY

CLASSIFICAZIONE & FISIOPATOLOGIA



DIMENSIONE DEL PROBLEMA

popolazioni	*Incidenza (N/1000 ab/anno)*	*%*
popolazione generale	*18-40*	*100*
assistenza medica	*9.3-9.5*	*25-50*
valutazione specialistica	*3.6*	*10-20*
valutazione urgente al DEA	*0.7-1.8*	*2-10*
accessi al PS-DEA		*1-3%*

- *Olde Nordkamp et al. Am J Emerg Med 2009; 27:271-9*
- *Malasana et al. Pacing Clin Electrophysiol 2011; 34:278-83*

DIMENSIONE DEL PROBLEMA

Accessi al PS-DEA	*1- 3%*
Ospedalizzazioni	*> 50% delle sincopi* *~ 2% di tutti i ricoveri*
Degenza media	*~ 7-8 giorni*
Costo medio	*1.500 - 3.000 €*
Diagnosi	*< 50%*

OESIL Study (G ital Cardiol 1999; 29:533-9)

EGSYS 1 (Europace 2003; 5:283-91)

Del Rosso A (Ital Heart J Supp 2000; 1:772-6)

IL PAZIENTE CON PdCT in PS-DEA: PROBLEMATICHE APERTE

- *elevati costi di gestione*
- *bassa performance diagnostica*

VALUTAZIONE DEL PAZIENTE CON PdCT NEL PS-DEA: OBIETTIVI

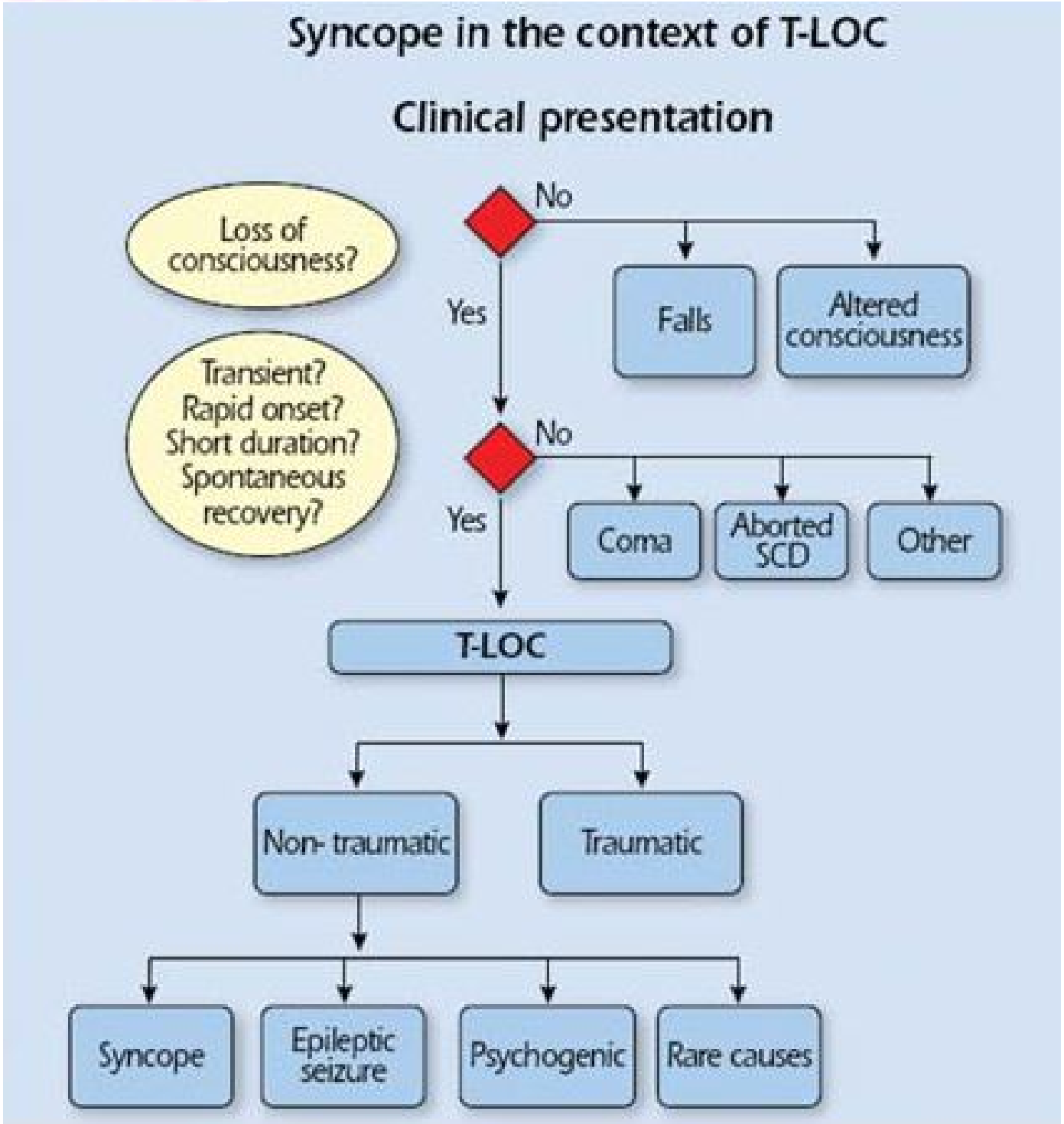
1. *identificare quando possibile la causa specifica della sincope per attuare una strategia di trattamento mirata al meccanismo*

2. *valutare la prognosi ed il rischio di eventi avversi severi (inclusa mortalità) e di recidiva sincopale*

CASO CLINICO

- *Paziente donna, 31 anni*
- *Assenza di cardiopatia*
- *Episodi di PdCT dall'infanzia, sempre in ortostatismo (massimo 1 episodio/anno)*
- *Nessun traumatismo significativo*
- *Si presenta al PS per un nuovo episodio al lavoro (commessa) preceduto da malessere e pallore*

ESC GUIDELINES



European Heart Journal (2009) 30, 2631–2671
doi:10.1093/eurheartj/ehp298

PAZIENTE CON PdCT NEL PS-DEA: VALUTAZIONE INIZIALE

- *Inquadramento evento (caratteristiche della PdCT)*
- *Anamnesi (personale e familiare)*
- *Esame Obiettivo + PA clino-orto*
- *ECG*
- *Chimica Clinica (?)*
- *MSC (?)*
- *Eventualmente EcoCG e monitoraggio ECG*

Estabilished diagnosis at initial evaluation: commonly accepted diagnostic criteria

Reflex syncope

- Classical vasovagal syncope is diagnosed if syncope is precipitated by emotional distress (such as fear, severe pain, instrumentation, blood phobia) or prolonged standing and is associated with typical prodromal symptoms due to autonomic activation (intense pallor, sweating, nausea, feeling of warmth, odd sensation in the abdomen, and lightheadedness or dizziness).
- Situational syncope is diagnosed if syncope occurs during or immediately after specific triggers:

  Gastrointestinal stimulation (swallow, defecation, visceral pain)

  Micturition (post-micturition)

  Post-exercise

  Post-prandial

  Cough, sneeze

  Others (e.g., laughing, brass instrument playing, weightlifting)

Orthostatic syncope is diagnosed when the history is consistent with the diagnosis and there is documentation of orthostatic hypotension during an active standing test (usually defined as a decrease in systolic blood pressure ≥20 mm Hg or a decrease of systolic blood pressure to <90 mm Hg) associated with syncope or pre-syncope (a fall >30 mm Hg is needed in hypertensive subjects).

Arrhythmia-related syncope is diagnosed by ECG (including ECG monitoring) when there is:

- Sinus bradycardia <40 beats/min or repetitive sinoatrial blocks or sinus pauses >3 s
- Second-degree Mobitz II or third-degree atrioventricular block
- Alternating left and right bundle branch block
- Paroxysmal supraventricular tachycardia or ventricular tachycardia
- Pacemaker or ICD malfunction with cardiac pauses

Cardiac ischemia-related syncope is diagnosed when symptoms are present with ECG evidence of acute ischemia with or without myocardial infarction

Cardiovascular syncope is diagnosed by echocardiography performed at initial evaluation when syncope presents in patients with prolapsing atrial myxoma or other intracardiac tumors, severe aortic stenosis, pulmonary hypertension, pulmonary embolus or other hypoxic states, acute aortic dissection, pericardial tamponade, obstructive hypertrophic cardiomyopathy, and prosthetic valve dysfunction

Treatment of reflex syncope

ESC GUIDELINES

Recommendations	Class[a]	Level[b]
• Explanation of the diagnosis, provision of reassurance, and explanation of risk of recurrence are indicated in all patients	I	C
• Isometric PCMs are indicated in patients with prodrome	I	B
• Cardiac pacing should be considered in patients with dominant cardioinhibitory CSS	IIa	B
• Cardiac pacing should be considered in patients with frequent recurrent reflex syncope, age >40 years, and documented spontaneous cardioinhibitory response during monitoring	IIa	B
• Midodrine may be indicated in patients with VVS refractory to lifestyle measures	IIb	B
• Tilt training may be useful for education of patients but long-term benefit depends on compliance	IIb	B
• Cardiac pacing may be indicated in patients with tilt-induced cardioinhibitory response with recurrent frequent unpredictable syncope and age >40 after alternative therapy has failed	IIb	C
• Cardiac pacing is not indicated in the absence of a documented cardioinhibitory reflex	III	C
• β-Adrenergic blocking drugs are not indicated	III	A

Caso clinico: accertamenti effettuati

- *Emocromo, profilo renale, profilo epatico, profilo coagulativo, ITn, D-D*
- *ECG*
- *EcoCG*
- *TC cerebrale smc*
- *Visita neurologica e cardiologica*
- *ECG-Holter*
- *Ricovero 4 gg*

VALUTAZIONE DEL PAZIENTE CON PdCT: PROBLEMI DIAGNOSTICI

- *assenza di un "gold standard" diagnostico*
- *ampia variabilità prognostica*
- *medicina difensiva*
- *scarsa conoscenza (applicazione) delle linee guida*

European Heart Journal (2009) **30**, 2631–2671
doi:10.1093/eurheartj/ehp298

ESC GUIDELINES

Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

Developed in collaboration with, European Heart Rhythm Association (EHRA)[1], Heart Failure Association (HFA)[2], and Heart Rhythm Society (HRS)[3]

Endorsed by the following societies, European Society of Emergency Medicine (EuSEM)[4], European Federation of Internal Medicine (EFIM)[5], European Union Geriatric Medicine Society (EUGMS)[6], American Geriatrics Society (AGS), European Neurological Society (ENS)[7], European Federation of Autonomic Societies (EFAS)[8], American Autonomic Society (AAS)[9]

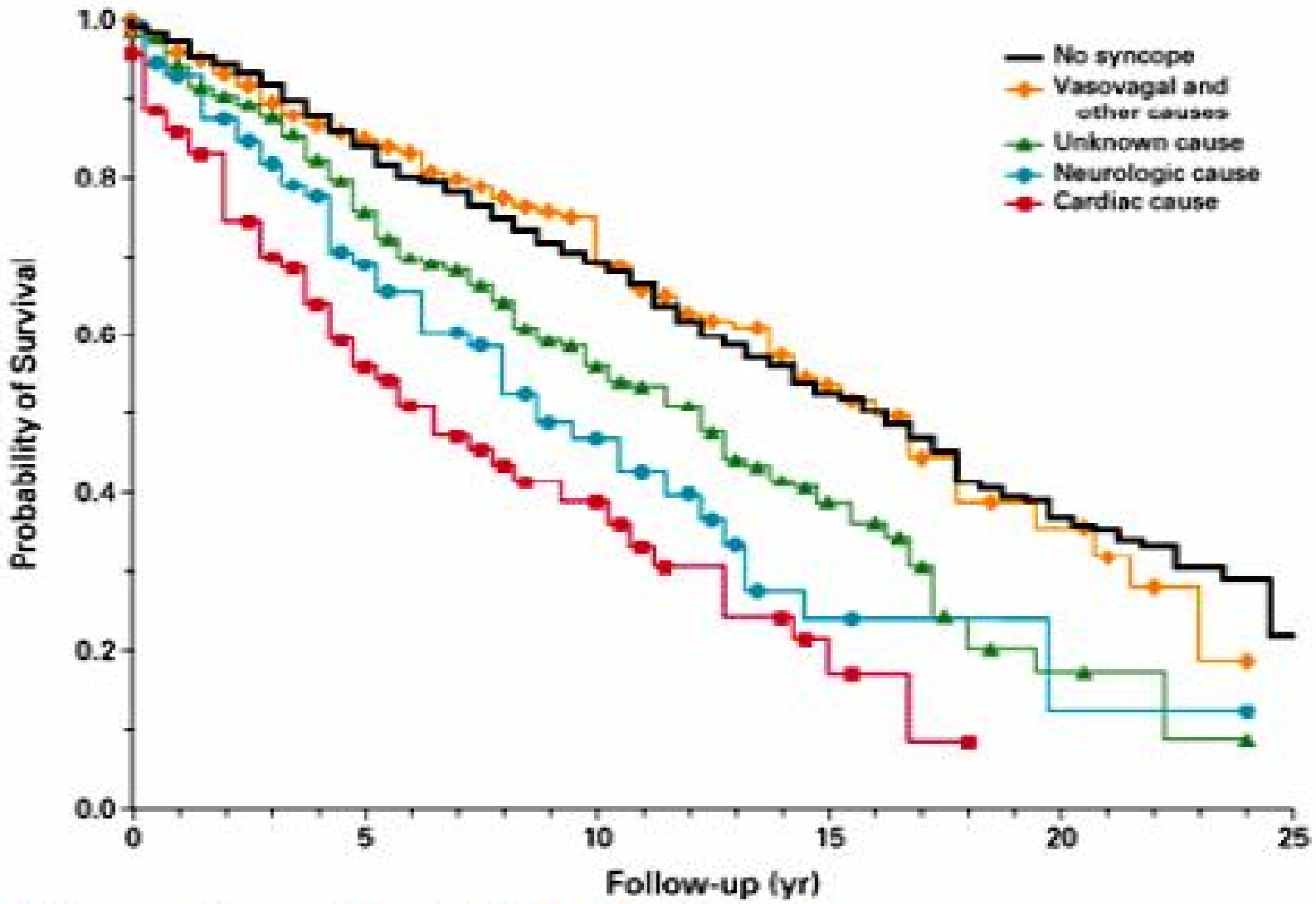
Compete sempre al Medico d'Urgenza, nel DEA, la diagnosi definitiva e il trattamento della perdita transitoria di coscienza/sincope?

EVIDENTEMENTE NO!

VALUTAZIONE DEL PAZIENTE CON PdCT NEL PS-DEA: OBIETTIVI

1. *identificare quando possibile la causa specifica della sincope per attuare una strategia di trattamento mirata al meccanismo*
2. *valutare la prognosi ed il rischio di eventi avversi severi (inclusa mortalità) e di recidiva sincopale*

Curva di sopravvivenza per le varie cause di sincope



Soteriades ES, Evans JC, Larson MG, et al. NEJM. 2002;347:878-85.

Prognosi del paziente con Sincope

- la mortalità a 30 gg dalla presentazione al DEA è dello 0.7%

Sheldon R. et al. Position Paper Canadian Cardiovasc Society Can J Cardiol 2011; 27: 246-253.

- l'82% dei pazienti che muoiono dopo presentazione al DEA (follow-up 614 gg) aveva una cardiopatia o ECG anormale

Ungar A. et al. The EGSYS 2 follow-up study Eur Heart J 2010; 31: 2021-2026.

Sincope ad alto rischio: ricovero in ambiente protetto/specialistico

- *Malattia cardiaca strutturale o coronarica severa* *(scompenso cardiaco, bassa FE, pregresso IMA)*
- *Sospetto ECG di sincope aritmica* *(TVns, blocco bifascicolare, bradicardia marcata, blocco senoatriale, preeccitazione V, pattern Brugada, QT lungo/corto, criteri Displasia VD)*
- *Sospetto clinico di sincope aritmica* *(durante esercizio, in posizione supina, cardiopalmo, familiarità per morte improvvisa)*
- *Comorbosità rilevati* *(severa anemia, disturbi elettrolitici, ecc.)*

European Heart Journal (2003) 24, 811–819

ELSEVIER

Development and prospective validation of a risk stratification system for patients with syncope in the emergency department: the OESIL risk score

Furio Colivicchi[a*], Fabrizio Ammirati[a], Domenico Melina[b], Vincenzo Guido[a], Giuseppe Imperoli[c], Massimo Santini[a], for the OESIL (Osservatorio Epidemiologico sulla Sincope nel Lazio) study investigators

Heart ONLINE

Clinical predictors of cardiac syncope at initial evaluation in patients referred urgently to a general hospital: the EGSYS score

A Del Rosso, A Ungar, R Maggi, F Giada, N R Petix, T De Santo, C Menozzi and M Brignole

Heart 2008;94;1620-1626; originally published online 2 Jun 2008; doi:10.1136/hrt.2008.143123

GIMSI
Gruppo Italiano Multidisciplinare per lo Studio della Sincope

Punteggio EGSYS

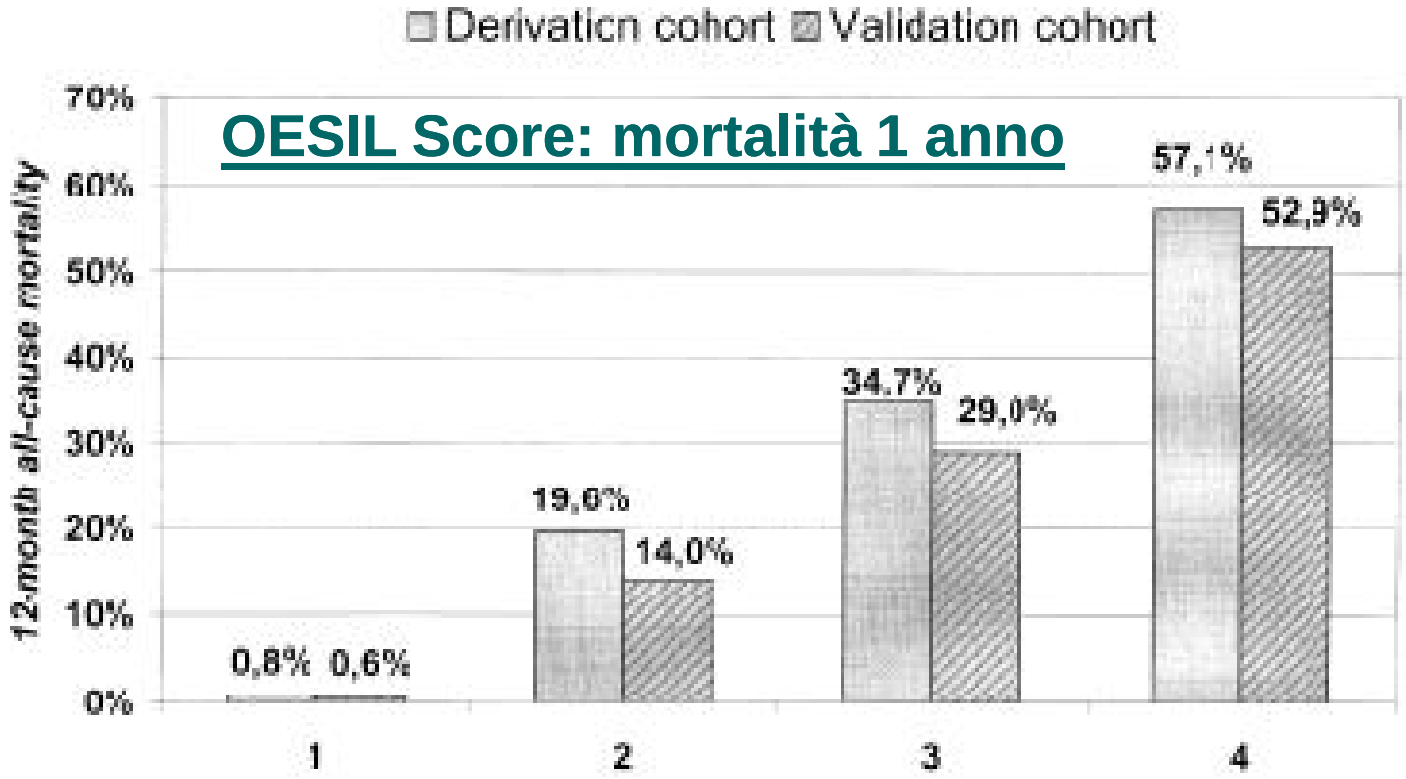
Parametro	Valore
• Palpitazioni precedenti la sincope	+ 4 punti
• Cardiopatia e/o elettrocardiogramma patologico	+ 3 punti
• Sincope durante lo sforzo	+ 3 punti
• Sincope da supino	+ 2 punti
• Fattori precipitanti e/o predisponenti (ambiente caldo, prolungato ortostatismo, paura-dolore-emozione)	– 1 punto
• Prodromi neurovegetativi (nausea/vomito)	– 1 punto

Un punteggio ≥ 3 indica un rischio aumentato di sincope cardiogena

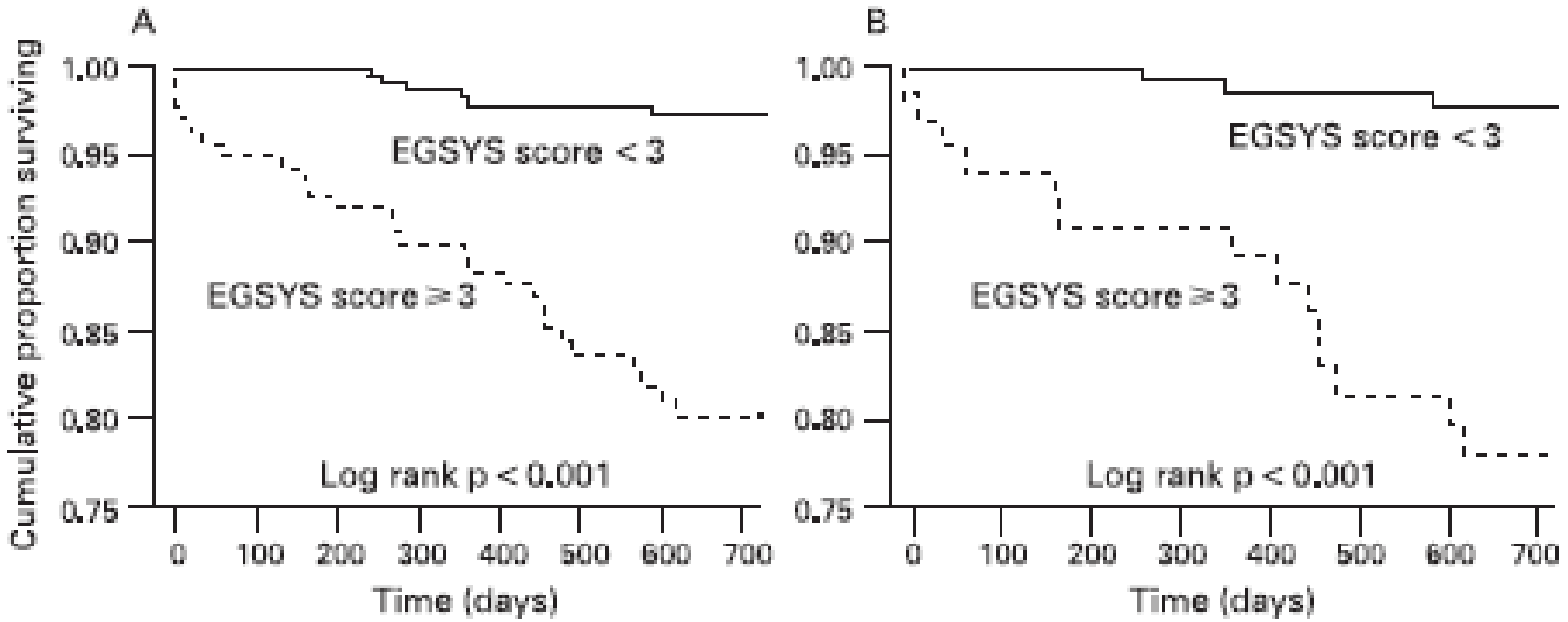
Punteggio OESIL

parametro	valore
○ Età >65 anni	1
○ Storia di malattia Cardiovascolare	1
○ Sincope senza prodromi	1
○ Alterazioni ECG significative	1
UN PUNTEGGIO ≥2 INDICA UN SIGNIFICATIVO RISCHIO DI MORTALITA’	

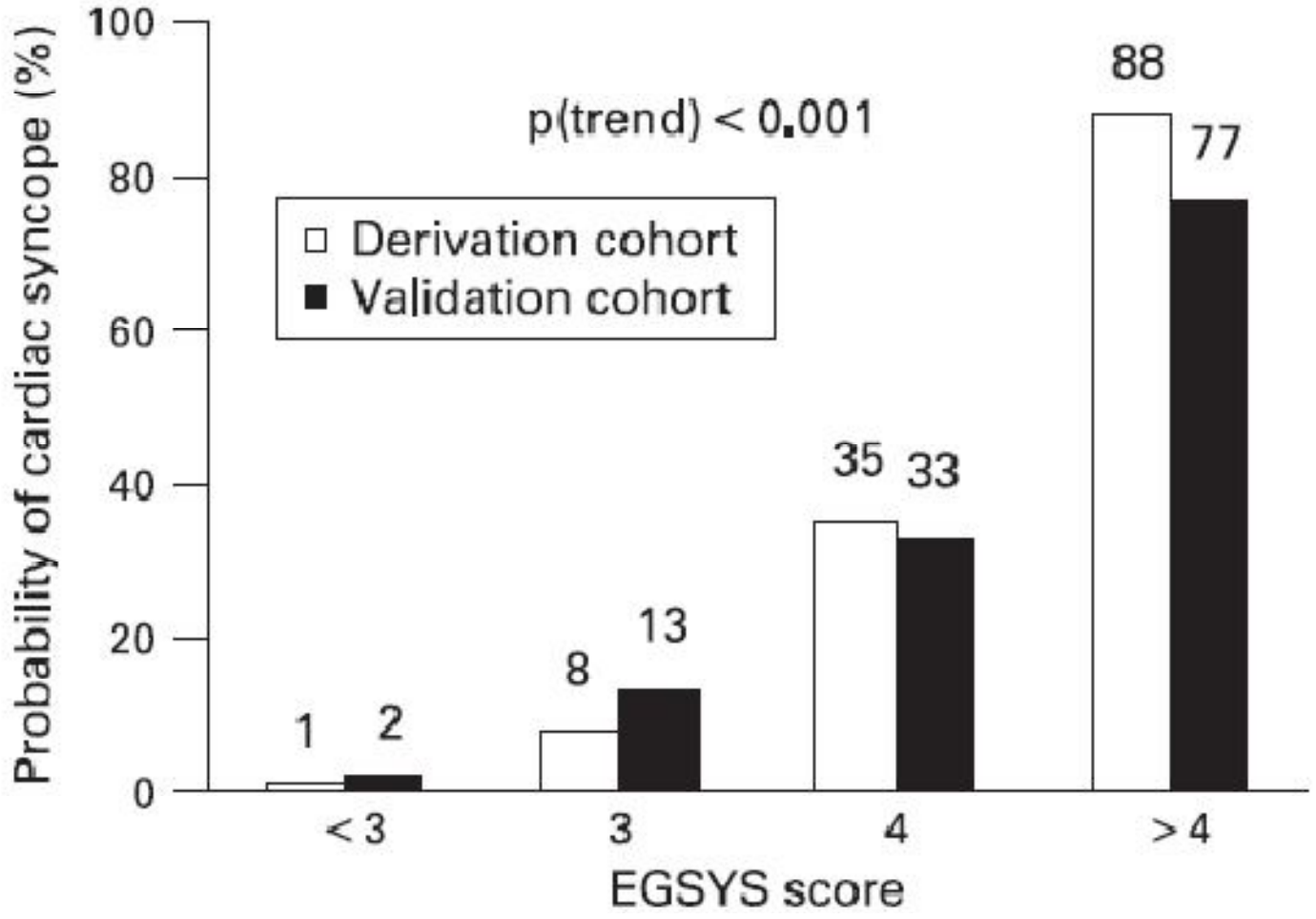
OESIL Score: mortalità 1 anno



EGSYS Score: curva di sopravvivenza



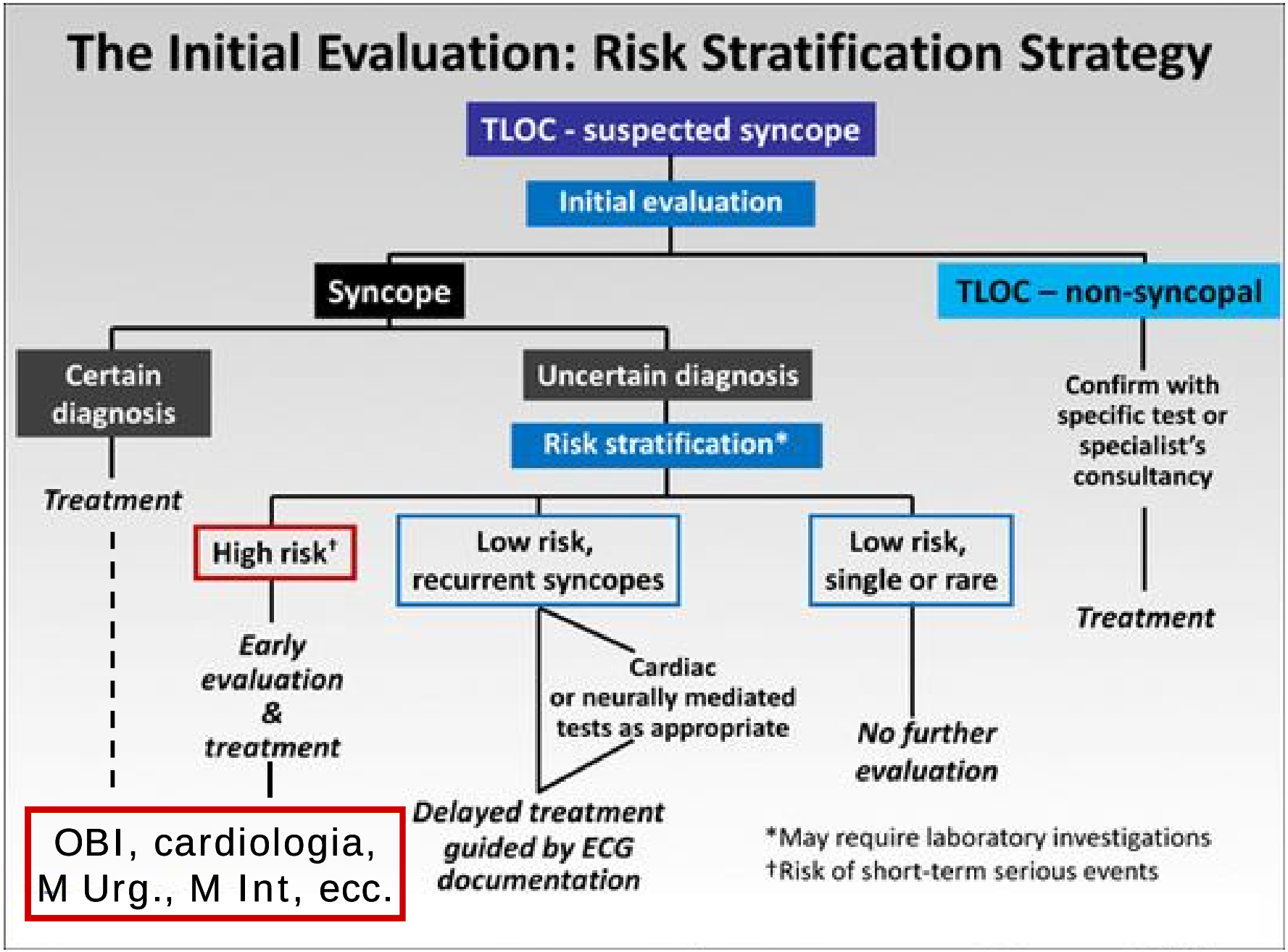
EGSYS Score: probabilità di sincope cardiogena



Patients at risk

Derivation cohort	134 (52%)	38 (15%)	72 (28%)	16 (6%)
Validation cohort	156 (61%)	41 (16%)	46 (18%)	13 (5%)

ESC Guidelines. Eur Heart J. 2009; 30: 2631-2671.



CASO CLINICO 2

- *Paziente maschio, 60 anni*
- *Ipertensione arteriosa. SCA 57 aa con PCI + DES su CD (controlli periodici: NDR)*
- *Episodi di PdCT da circa 2 anni preceduti da senso di "testa vuota" (2-3 episodi/anno)*
- *2 traumi cranici senza lesioni endocraniche*
- *Si presenta al PS per nuovo episodio al lavoro con caduta dalle scale (taxista)*

Caso clinico 2: accertamenti effettuati

- *Anamnesi: no prodromi significativi, non DT*
- *PA clino-orto: normale; MSC: negativo*
- *Emocromo, p.renale,epatico,coagulativo,D-D,ITn: NDR*
- *ECG e monitoraggio telemetria 48 ore: NDR*
- *EcoCG: NDR (lieve ipertrofia VS)*
- *TC cerebrale smc (per il trauma: NDR)*
- *Visita cardiologica + Test ergometrico: NDR*
- *Ricovero 8 gg*

Caso clinico 2: come procedere?

Pur in presenza di una probabile sincope riflessa, è lecito fermarsi a questo punto oppure bisognerebbe stabilire il meccanismo della sincope per instaurare il giusto trattamento?

ESC GUIDELINES

Tilt test: croce e delizia dei cardiologi

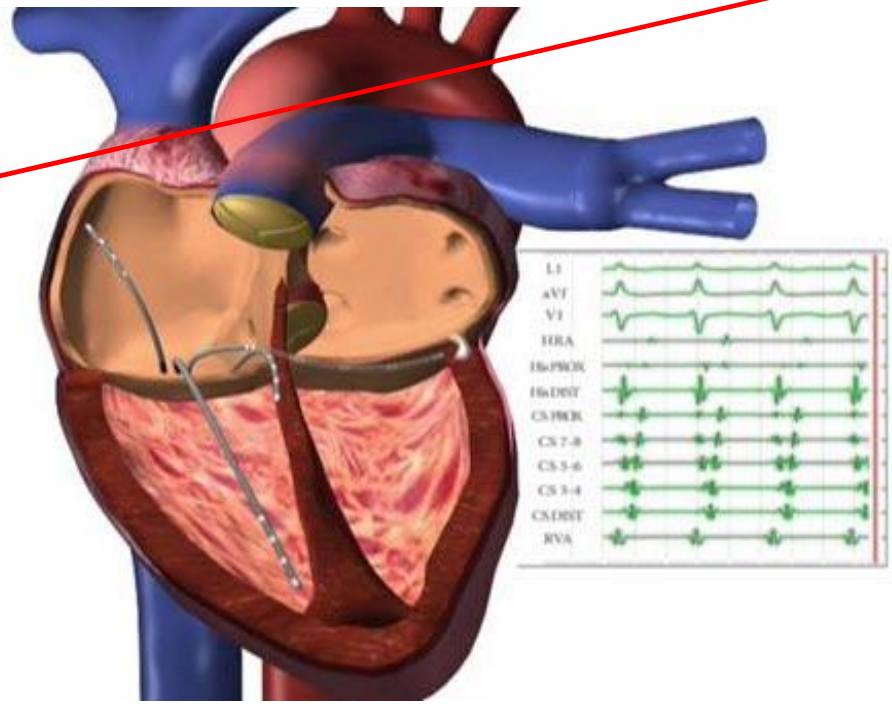
Indications		
• Tilt testing is indicated in the case of an unexplained single syncopal episode in high risk settings (e.g. occurrence of, or potential risk of physical injury or with occupational implications), or recurrent episodes in the absence of organic heart disease, or in the presence of organic heart disease, after cardiac causes of syncope have been excluded	I	B
• Tilt testing is indicated when it is of clinical value to demonstrate susceptibility to reflex syncope to the patient	I	C
• Tilt testing should be considered to discriminate between reflex and OH syncope	IIa	C
• Tilt testing may be considered for differentiating syncope with jerking movements from epilepsy	IIb	C
• Tilt testing may be indicated for evaluating patients with recurrent unexplained falls	IIb	C
• Tilt testing may be indicated for evaluating patients with frequent syncope and psychiatric disease	IIb	C
• Tilt testing is not recommended for assessment of treatment	III	B
• Isoproterenol tilt testing is contraindicated in patients with ischaemic heart disease	III	C

Caso clinico 2

Tilt test: negativo

Studio Elettrofisiologico

NEGATIVO!



Recommendations	Class[a]	Level[b]
Indications		
• In patients with ischaemic heart disease EPS is indicated when initial evaluation suggests an arrhythmic cause of syncope (listed in *Table 10*) unless there is already an established indication for ICD	I	B
• In patients with BBB, EPS should be considered when non-invasive tests have failed to make the diagnosis	IIa	B
• In patients with syncope preceded by sudden and brief palpitations, EPS may be performed when other non-invasive tests have failed to make the diagnosis	IIb	B
• In patients with Brugada syndrome, ARVC and hypertrophic cardiomyopathy an EPS may be performed in selected cases	IIb	C
• In patients with high-risk occupations, in whom every effort to exclude a cardiovascular cause of syncope is warranted, an EPS may be performed in selected cases	IIb	C
• EPS is not recommended in patients with normal ECG, no heart disease, and no palpitations	III	B
Diagnostic criteria		
• EPS is diagnostic, and no additional tests are required, in the following cases:		
☐ Sinus bradycardia and prolonged CSNRT (>525 ms)	I	B
☐ BBB and either a baseline HV interval of ≥100 ms, or second or third degree His–Purkinje block is demonstrated during incremental atrial pacing, or with pharmacological challenge	I	B
☐ Induction of sustained monomorphic VT in patients with previous myocardial infarction	I	B
☐ Induction of rapid SVT which reproduces hypotensive or spontaneous symptoms	I	B
• An HV interval between 70 and 100 ms should be considered diagnostic	IIa	B
• The induction of polymorphic VT or ventricular fibrillation in patients with Brugada syndrome, ARVC, and patients resuscitated from cardiac arrest may be considered diagnostic	IIb	B
• The induction of polymorphic VT or ventricular fibrillation in patients with ischaemic cardiomyopathy or DCM cannot be considered a diagnostic finding	III	B

.....sebbene la sincope riflessa rimanga eziologicamente la più frequente, contando per circa i 2/3 dei casi, asistolie protratte dovute ad arresto sinusale, blocchi A-V, o la combinazione dei due, costituiscono il meccanismo sincopale più frequente nelle forme inspiegate essendone responsabili in oltre il 50% dei casi.

Sistemi per il monitoraggio ECG

- In-hospital Monitoring
- Holter Monitoring
- Event Recorder
- Esternal Loop Recorder (ELR)
- Remote (at home) Telemetry
- Implantable Loop Recorder (ILR)

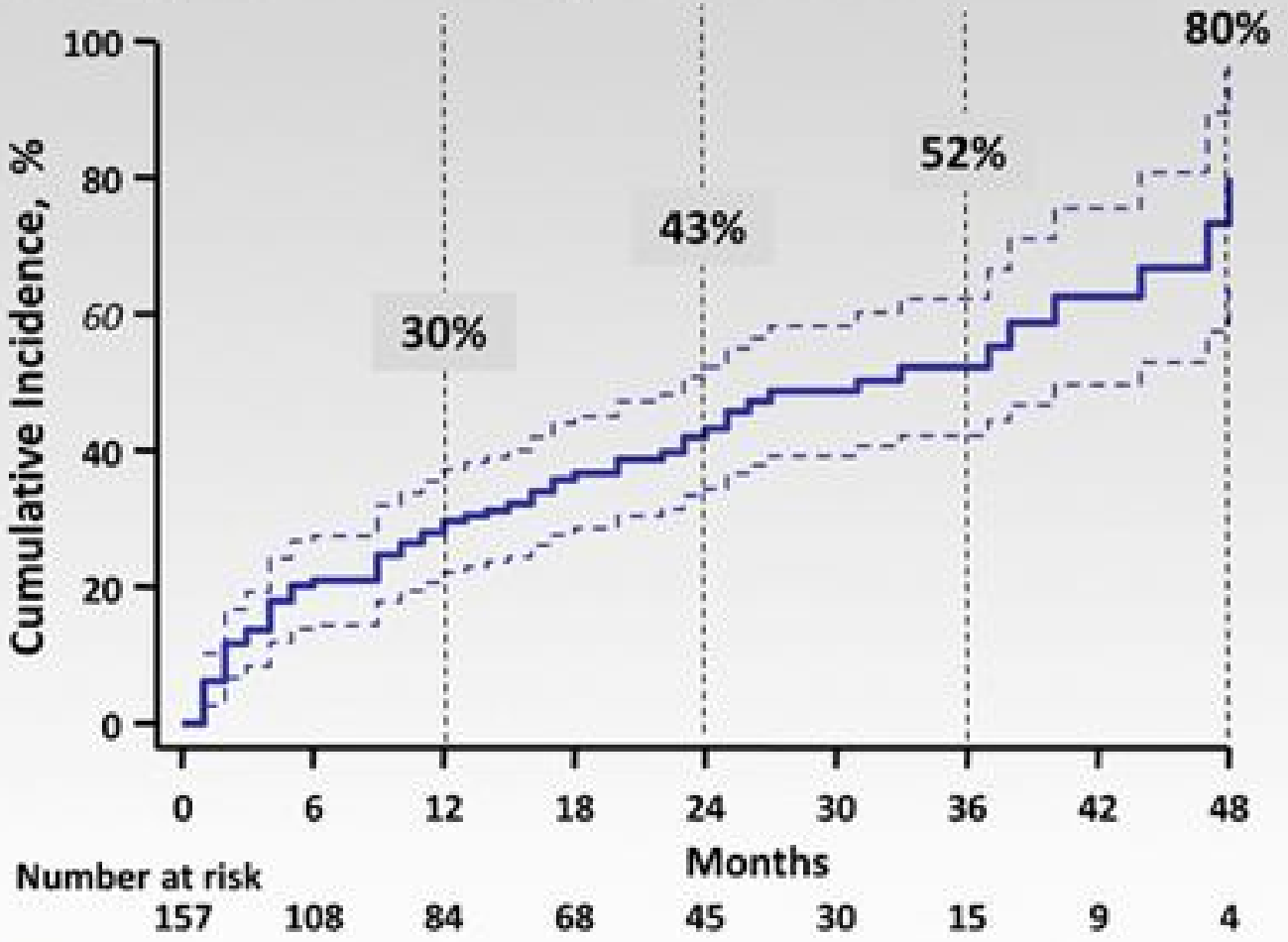
ECG monitoring: diagnostic criteria

- Correlation between syncope and an ECG abnormality (brady- or tachyarrhythmia)
- In absence of such correlation:

  - R-R pause > 3 sec. during waking state
  - periods of Mobitz II 2° and 3° A-V block during waking state
  - rapid paroxysmal atrial/ventricular tachycardia
- Correlation between syncope and regular sinus rhythm excludes arrhythmic syncope

Diagnostic Yield of Very Prolonged ILR Observation

Arrhythmologic Center - Lavagna 2001-2010



Arrhythmia & EP

From Furukawa T, et al. *J Cardiovasc Electrophysiol*. 2012;23:67-71.
Republished with permission.

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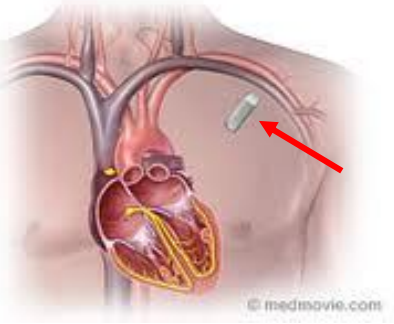
Medscape EDUCATION

ECG monitoring: diagnostic power

- *In-hospital Monitoring* *1-7*
- *Holter Monitoring* *1-7*
- *External Loop Recorder* *30*
- *Implantable Loop Recorder* *500*



Guidelines for the diagnosis and management of syncope (version 2009)

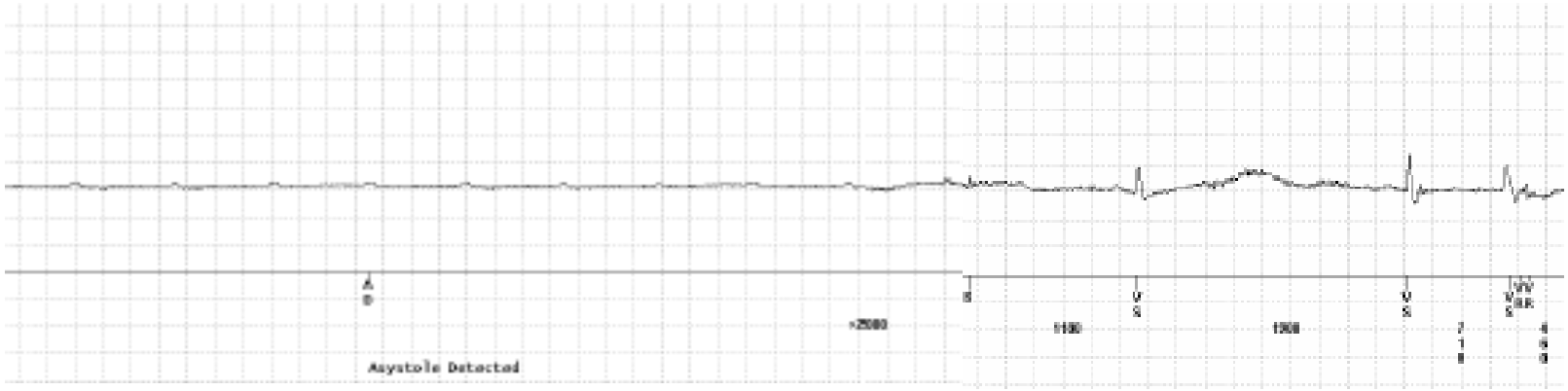
The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

ILR is indicated in:

☐	An early phase of evaluation in patients with recurrent syncope of uncertain origin, absence of high risk criteria listed in *Table 11* and a high likelihood of recurrence within battery longevity of the device	I	B
☐	High risk patients in whom a comprehensive evaluation did not demonstrate a cause of syncope or lead to a specific treatment	I	B

Implantable Loop Recorder Registration

BAV completo parossistico con sincope dopo 7 mesi



Trattamento: impianto pm bicamerale

Clinical evidence of ILR benefit in syncope evaluation

- **RAST (Randomized Assessment of Syncope Trial)**

43% ILR only vs. 20% conventional only
Cost/diagnosis is 26% less than conventional testing

- **EasyAs 1 (Eastbourne Syncope Assessment Study)**

43% (ILR) vs 6% (Conventional) (p<0.001)

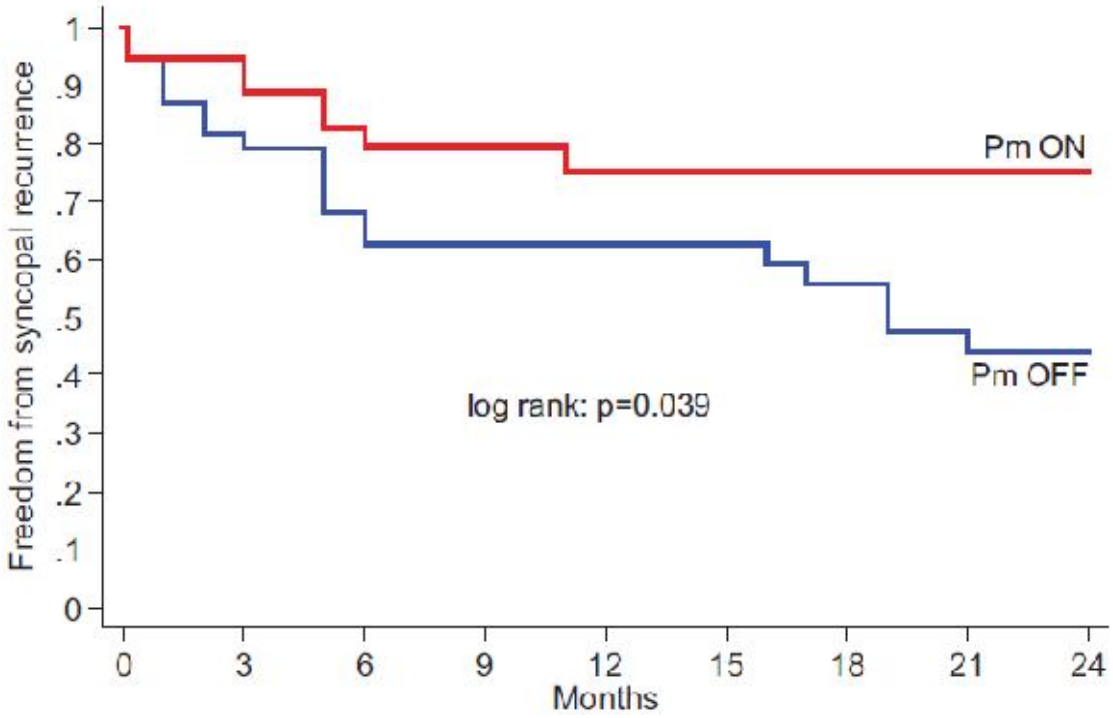
- **ISSUE 1 (International Study on Syncope of unexplained Etiology)**
- **ISSUE 2**

Pacemaker Therapy in Patients With Neurally Mediated Syncope and Documented Asystole

Third International Study on Syncope of Uncertain Etiology (ISSUE-3)

A Randomized Trial

Michele Brignole, MD; Carlo Menozzi, MD; Angel Moya, MD; Dietrich Andresen, MD; Jean Jacques Blanc, MD; Andrew D. Krahn, MD; Wouter Wieling, MD; Xulio Beiras, MD; Jean Claude Deharo, MD; Vitantonio Russo, MD; Marco Tomaino, MD; Richard Sutton, DSc; on behalf of the International Study on Syncope of Uncertain Etiology 3 (ISSUE-3) Investigators

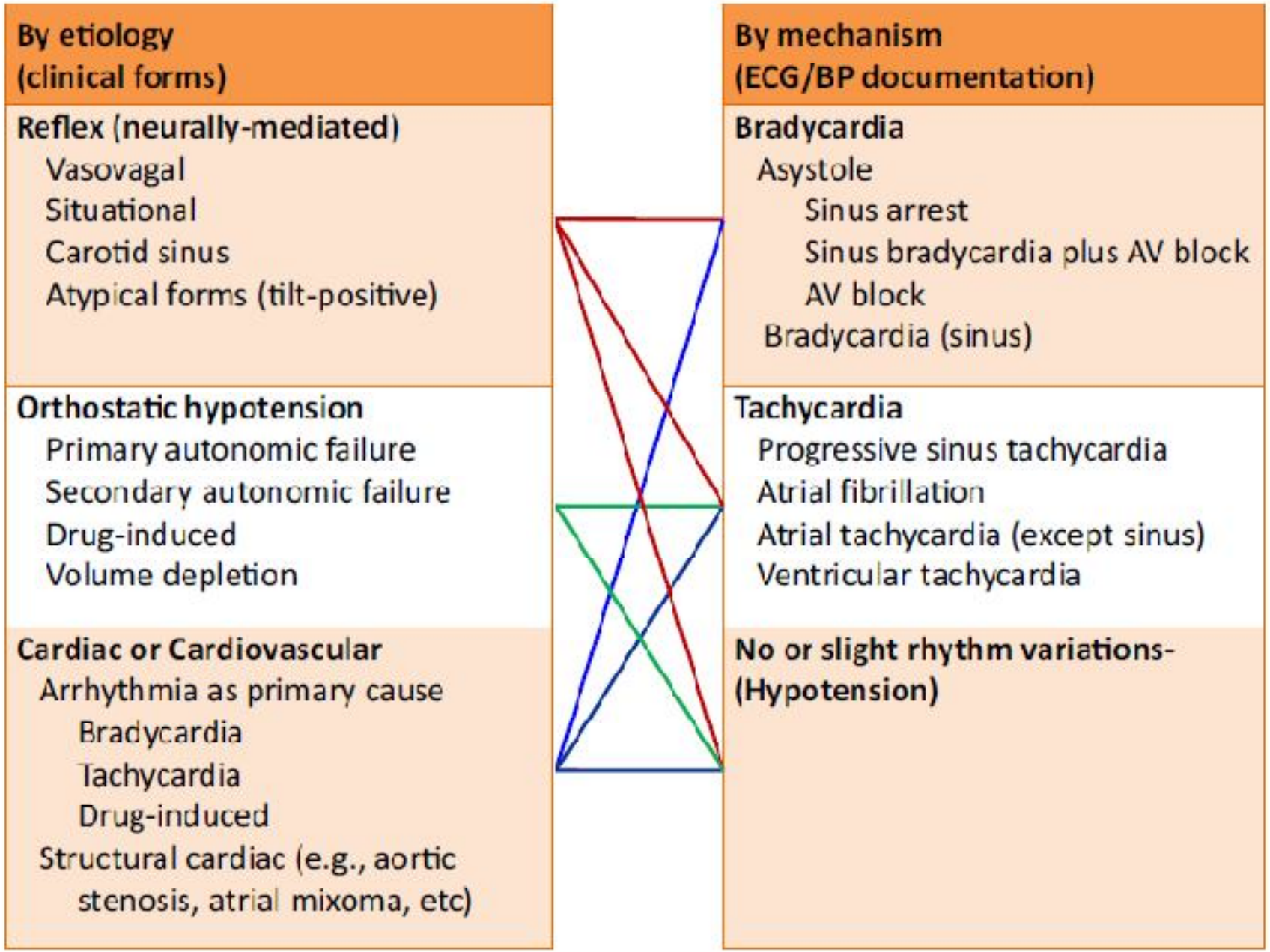


Time to first recurrence of syncope according to the intention-to-treat analysis

Circulation. 2012;125:2566-2571.

New Concepts in the Assessment of Syncope

Michele Brignole, MD,* Mohamed H. Hamdan, MD† (JACC 2012; 59:1583-91)



Symptom-rhythm correlation: the gold standard

La maggior parte dei test diagnostici utilizzati ci possono dire qualcosa sul paziente o provocare un evento in maniera artificiale, ma in effetti, il gold-standard diagnostico si ha solamente quando si osserva cosa sta succedendo quando il paziente ha un evento spontaneo.

(Andrew Krahn; Vancouver, Canada)

Diagnostica della Sincope

Test provocativi

- **rapidità diagnostica +**
- **specificità –**
- **diagnosi presuntiva**

Test confermativo

- **rapidità diagnostica –**
- **specificità +**
- **diagnosi certa**

European Heart Journal (2009) 30, 2631–2671
doi:10.1093/eurheartj/ehp298

Guidelines for the diagnosis and management of syncope (version 2009)

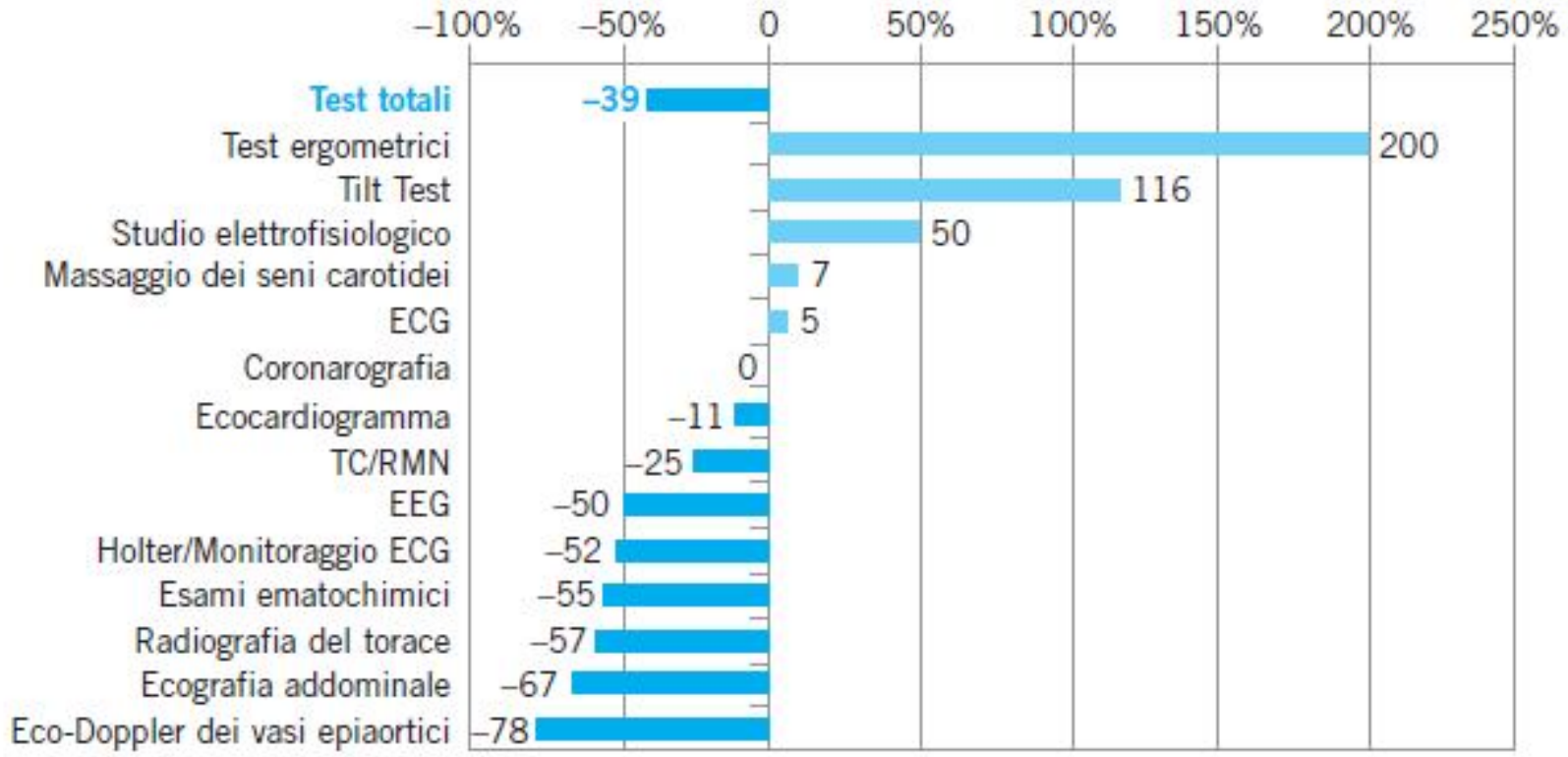
Key points for standardized care delivery:

- A cohesive, structured care pathway—delivered either within a single syncope facility or as a more multifaceted service—is recommended for global assessment of patients with T-LOC (suspected syncope).
- Referral can be directly from: family practitioners, ED, acute hospital inpatients, institutional settings.
- Objectives are to: give the patient continuity of care, reduce inappropriate hospitalizations, and set standards of clinical excellence.
- Experience and training in key components of cardiology, neurology, emergency and geriatric medicine are pertinent.

Europace (2006) 8, 644–650
doi:10.1093/europace/eul071

Standardized-care pathway vs. usual management of syncope patients presenting as emergencies at general hospitals

Michele Brignole[1*], Andrea Ungar[2], Angelo Bartoletti[3], Irene Ponassi[4], Alfonso Lagi[5], Chiara Mussi[6], Maria Angela Ribani[7], Gianni Tava[8,9], Marcello Disertori[8,9], Fabio Quartieri[8,9], Paolo Alboni[11], Antonio Raviele[12], Fabrizio Ammirati[13], Alessandro Scivales[14], and Tiziana De Santo[14] for the Evaluation of Guidelines in Syncope Study 2 (EGSYS-2) group



Diagnostic Examinations (Other Than Initial Evaluation)

Useful (when indicated)	Carotid sinus massage Tilt testing Echocardiogram Holter/loop monitoring Electrophysiological test Exercise stress testing
Almost never useful	EEG CT scan & MR Carotid Doppler sonography Ventricular SAECG Coronary angiography Pulmonary scintigraphy

Arrhythmia & EP

ESC Guidelines. *Eur Heart J.* 2009;30:2631-2671.

theheart.org Medscape EDUCATION

SIMEU

GIMSI Gruppo Italiano Multidisciplinare per lo Studio della Sincope

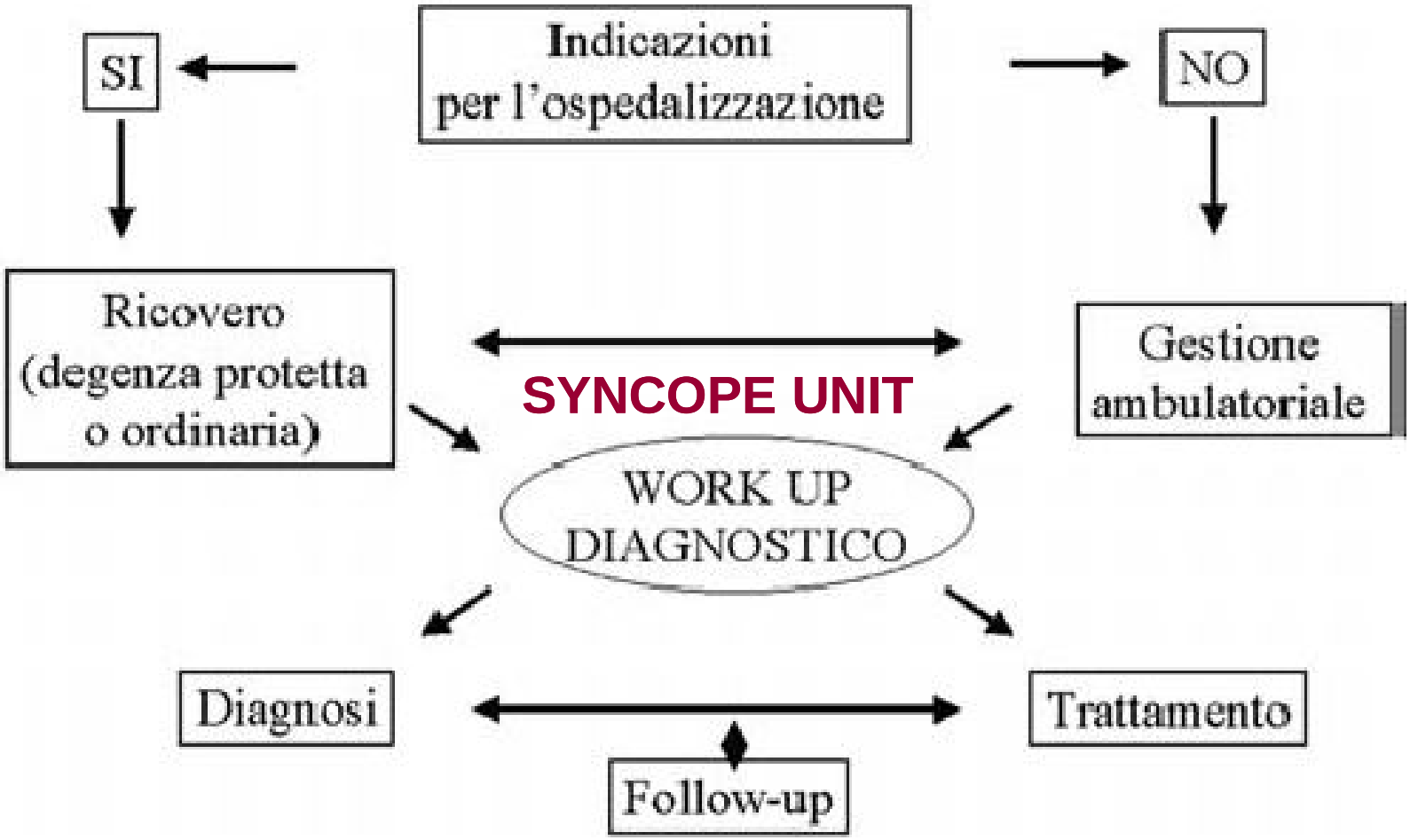
Europace (2006) 8, 644–650
doi:10.1093/europace/eul071

Standardized-care pathway vs. usual management of syncope patients presenting as emergencies at general hospitals

	Usual care	Standardized care	Variazione
Ospedalizzazioni	*47%*	*39%*	*- 17%*
Media n. test per paziente	*3.4 (3.1-4.0)*	*2.6 (2.1-3.0)*	*- 1*
Diagnosi: sincope neuromediata	*46%*	*65%*	*+ 41%*
Diagnosi: sincope ortostatica	*6%*	*10%*	*+ 66%*
Sincope cardiogena	*13%*	*13%*	*0*
Costo medio per paziente	*€ 1394*	*€ 1127*	*- 267 €*
*Costo per diagnosi**	*€ 1753*	*€ 1240*	*- 513 €*

La *Syncope Unit*: un nuovo modello organizzativo per la gestione del paziente con sincope

AIAC (Associazione Italiana di Aritmologia e Cardiostimolazione)
GIMSI (Gruppo Italiano Multidisciplinare per lo Studio della Sincope)



G Ital Cardiol 2010;11:323-328

Registro GIMSI

Syncope Unit Project (SUP)

Europace (2010) 12, 109–118
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CLINICAL RESEARCH
Syncope

Prospective multicentre systematic guideline-based management of patients referred to the Syncope Units of general hospitals†

Michele Brignole[1]*, Andrea Ungar[2], Ivo Casagranda[3], Michele Gulizia[4], Maurizio Lunati[5], Fabrizio Ammirati[6], Attilio Del Rosso[7], Massimo Sasdelli[8], Massimo Santini[9], Roberto Maggi[1], Elena Vitale[3], Alessandro Morrione[2], Giuseppina Maura Francese[4], Maria Rita Vecchi[5], and Franco Giada[10] for the Syncope Unit Project (SUP) investigators‡

Syncope Unit Project 2 (SUP 2)

Guideline-based Pacing Therapy for Reflex Syncope

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SYNCOPE UNIT
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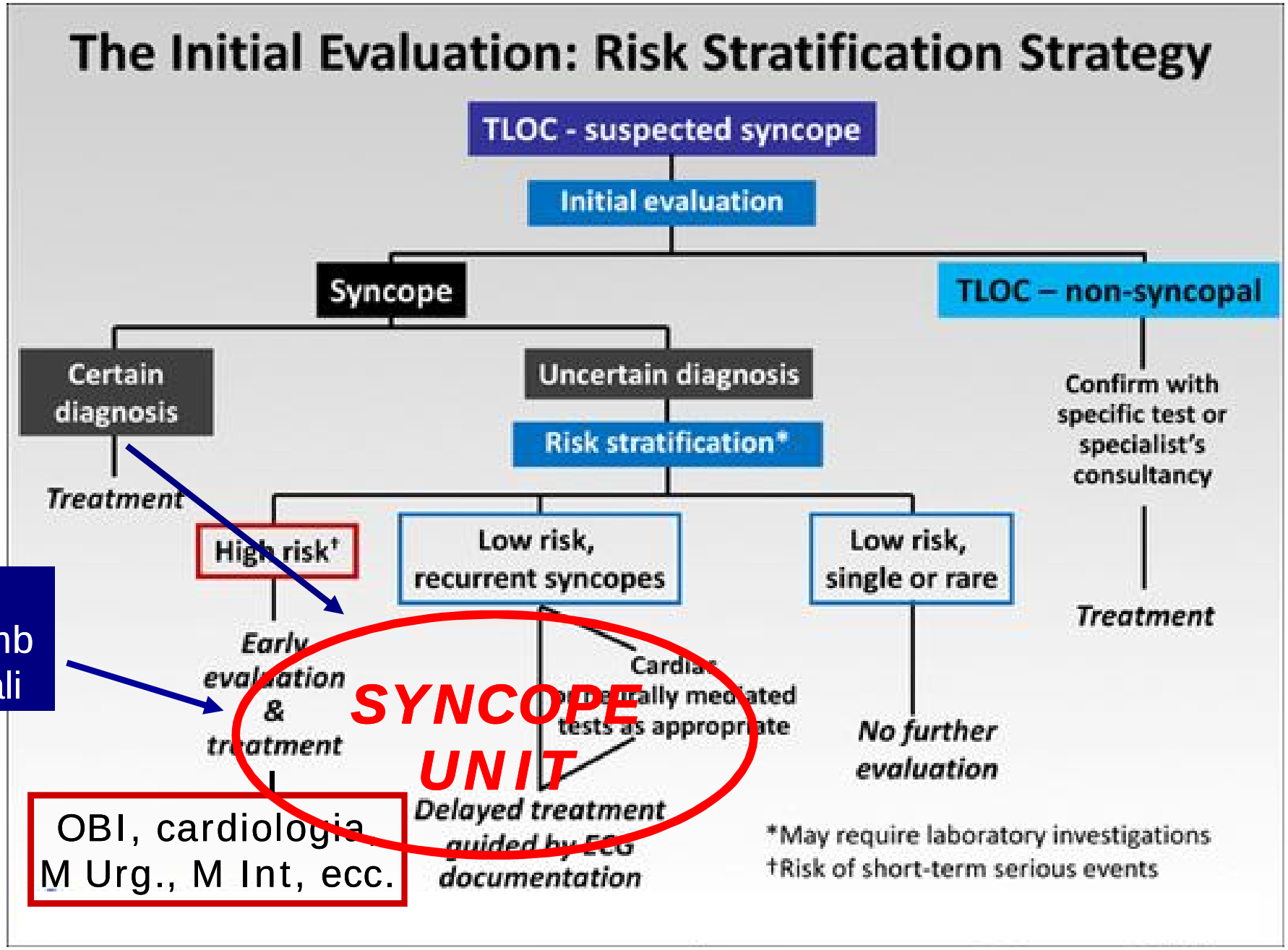
ESC Guidelines. Eur Heart J. 2009; 30: 2631-2671.



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