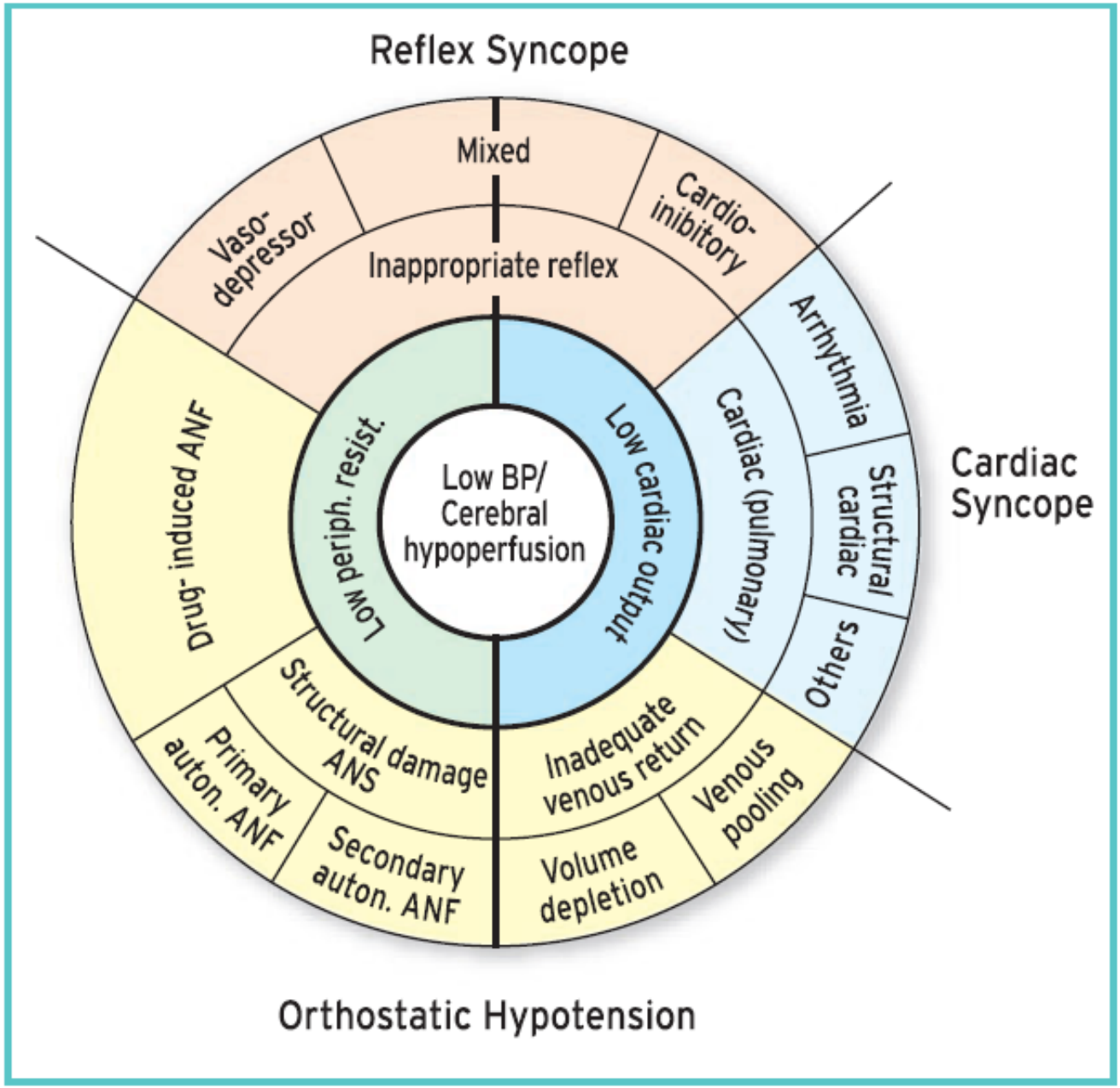

Síncope

Atendimento na emergência

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ESC European Society of Cardiology
European Heart Journal (2018) 39, 1883–1948
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2018 ESC Guidelines for the diagnosis and management of syncope

The Task Force for the diagnosis and management of syncope of the European Society of Cardiology (ESC)

Developed with the special contribution of the European Heart Rhythm Association (EHRA)

Endorsed by: European Academy of Neurology (EAN), European Federation of Autonomic Societies (EFAS), European Federation of Internal Medicine (EFIM), European Union Geriatric Medicine Society (EUGMS), European Society of Emergency Medicine (EuSEM)

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O que é síncope ?

- Perda transitória da consciência devido a um hipofluxo sanguíneo cerebral caracterizada por um início rápido, curta duração e recuperação espontânea e completa

Qual a finalidade da padronização do atendimento ?

- Reduzir o risco de recorrência e reduzir as consequências relacionadas com a recorrência da síncope

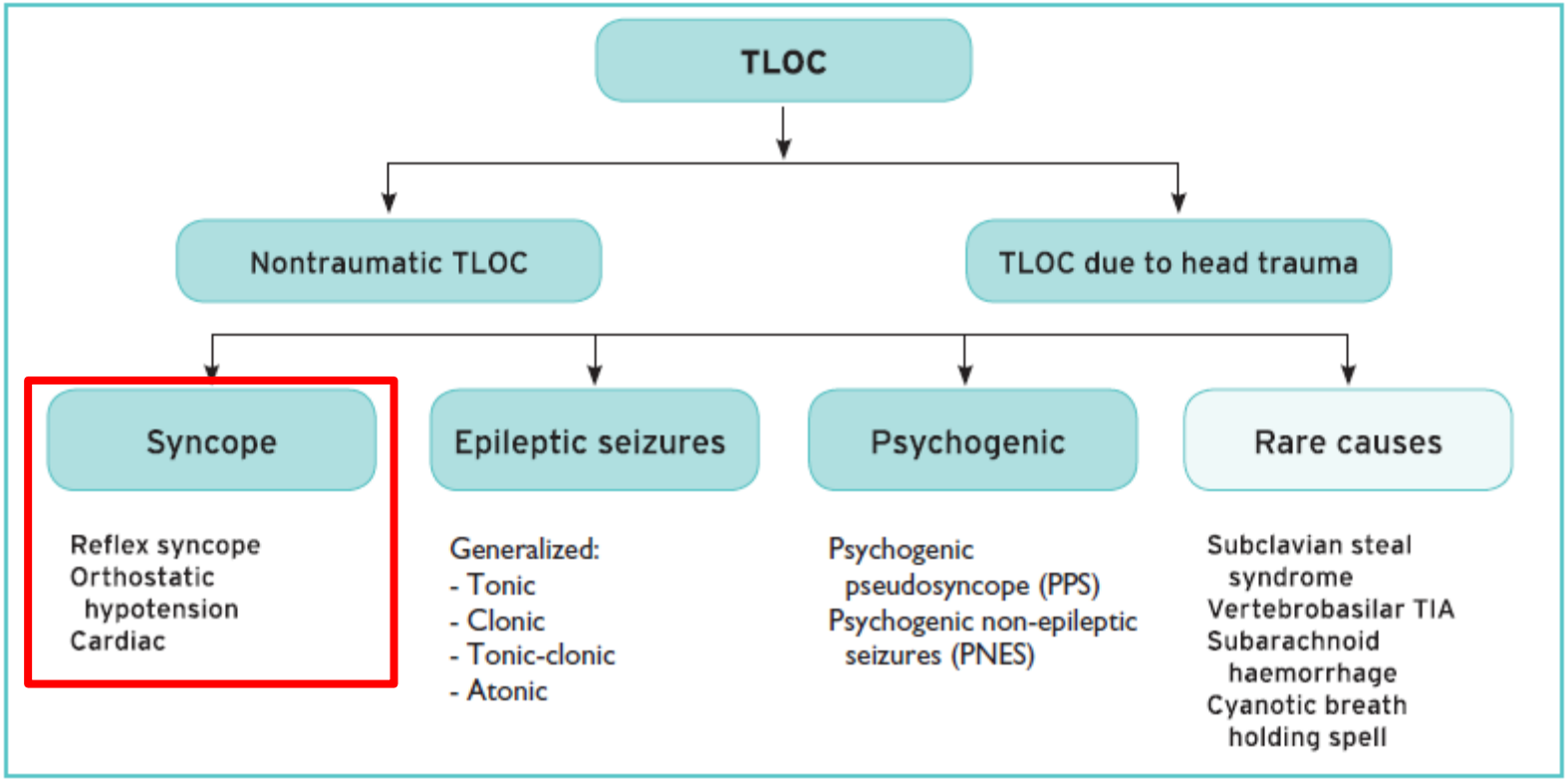

Figure 2 Syncope in the context of transient loss of consciousness. Non-traumatic transient loss of consciousness is classified into one of four groupings: syncope, epileptic seizures, psychogenic transient loss of consciousness, and a miscellaneous group of rare causes. This order represents their rate of occurrence. Combinations occur; e.g. non-traumatic transient loss of consciousness causes can cause falls with concussion, in which case transient loss of consciousness is both traumatic and non-traumatic. TIA = transient ischaemic attack; TLOC = transient loss of consciousness.

Table 3 **Classification of syncope**

Reflex (neurally mediated) syncope
Vasovagal: - orthostatic VVS: standing, less common sitting - emotional: fear, pain (somatic or visceral), instrumentation, blood phobia Situational: - micturition - gastrointestinal stimulation (swallow, defaecation) - cough, sneeze - post-exercise - others (e.g. laughing, brass instrument playing) Carotid sinus syndrome Non-classical forms (without prodromes and/or without apparent triggers and/or atypical presentation)
Syncope due to OH
Note that hypotension may be exacerbated by venous pooling during exercise (exercise-induced), after meals (postprandial hypotension), and after prolonged bed rest (deconditioning). Drug-induced OH (most common cause of OH): - e.g. vasodilators, diuretics, phenothiazine, antidepressants Volume depletion: - haemorrhage, diarrhoea, vomiting, etc. Primary autonomic failure (neurogenic OH): - pure autonomic failure, multiple system atrophy, Parkinson's disease, dementia with Lewy bodies Secondary autonomic failure (neurogenic OH): - diabetes, amyloidosis, spinal cord injuries, auto-immune autonomic neuropathy, paraneoplastic autonomic neuropathy, kidney failure
Cardiac syncope
Arrhythmia as primary cause: Bradycardia: - sinus node dysfunction (including bradycardia/tachycardia syndrome) - atrioventricular conduction system disease Tachycardia: - supraventricular - ventricular Structural cardiac: aortic stenosis, acute myocardial infarction/ischaemia, hypertrophic cardiomyopathy, cardiac masses (atrial myxoma, tumours, etc.), pericardial disease/tamponade, congenital anomalies of coronary arteries, prosthetic valve dysfunction Cardiopulmonary and great vessels: pulmonary embolus, acute aortic dissection, pulmonary hypertension

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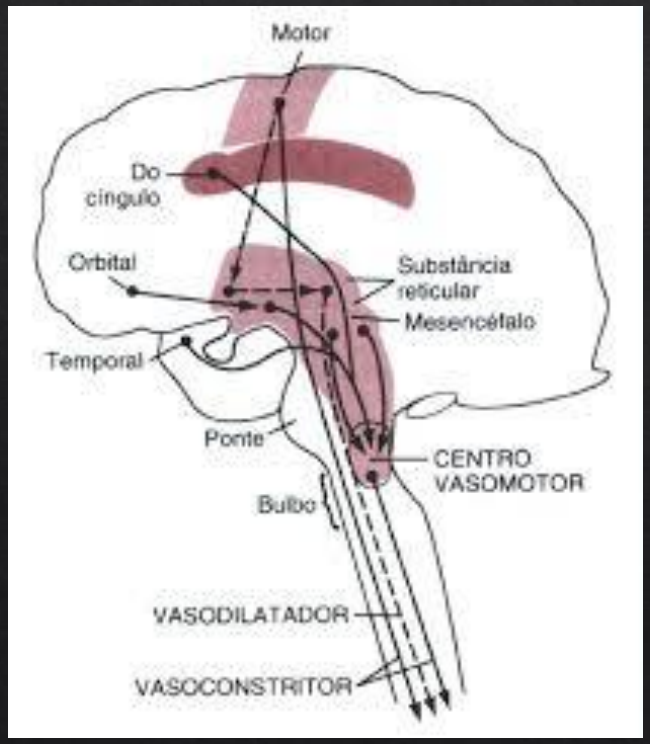
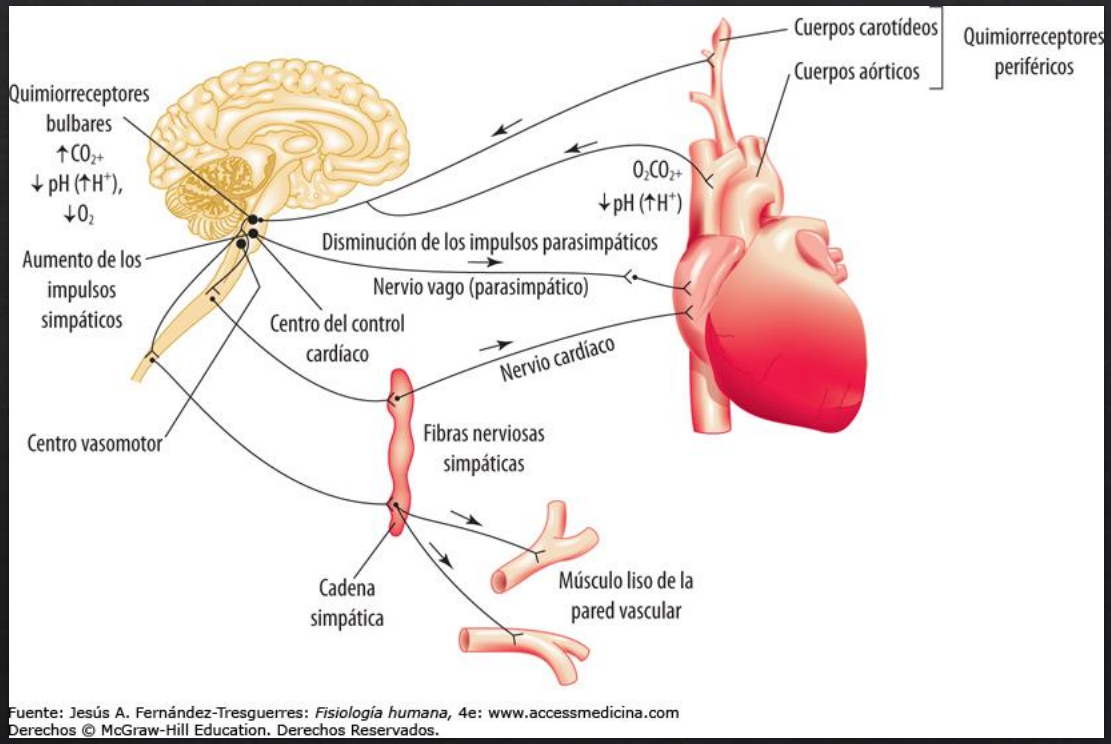
- post-exercise
- others (e.g. laughing, brass instrument playing)
Carotid sinus syndrome
Non-classical forms (without prodromes and/or without apparent triggers and/or atypical presentation)

Reflex syncope

- Long history of recurrent syncope, in particular occurring before the age of 40 years
- After unpleasant sight, sound, smell, or pain
- Prolonged standing
- During meal
- Being in crowded and/or hot places
- Autonomic activation before syncope: pallor, sweating, and/or nausea/vomiting
- With head rotation or pressure on carotid sinus (as in tumours, shaving, tight collars)
- Absence of heart disease

Controle do centro vasomotor por centros nervosos superiores





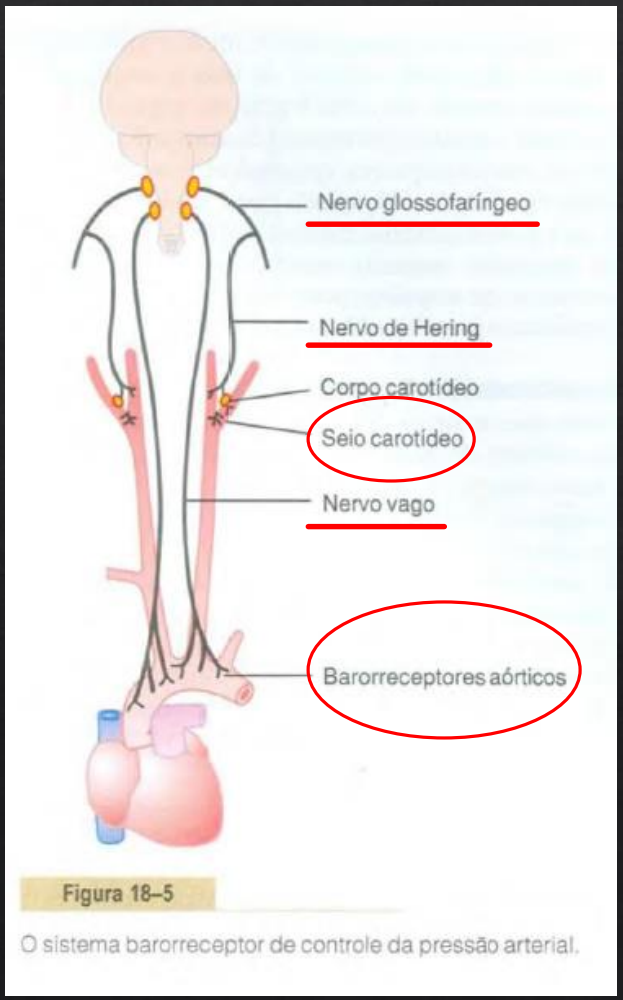
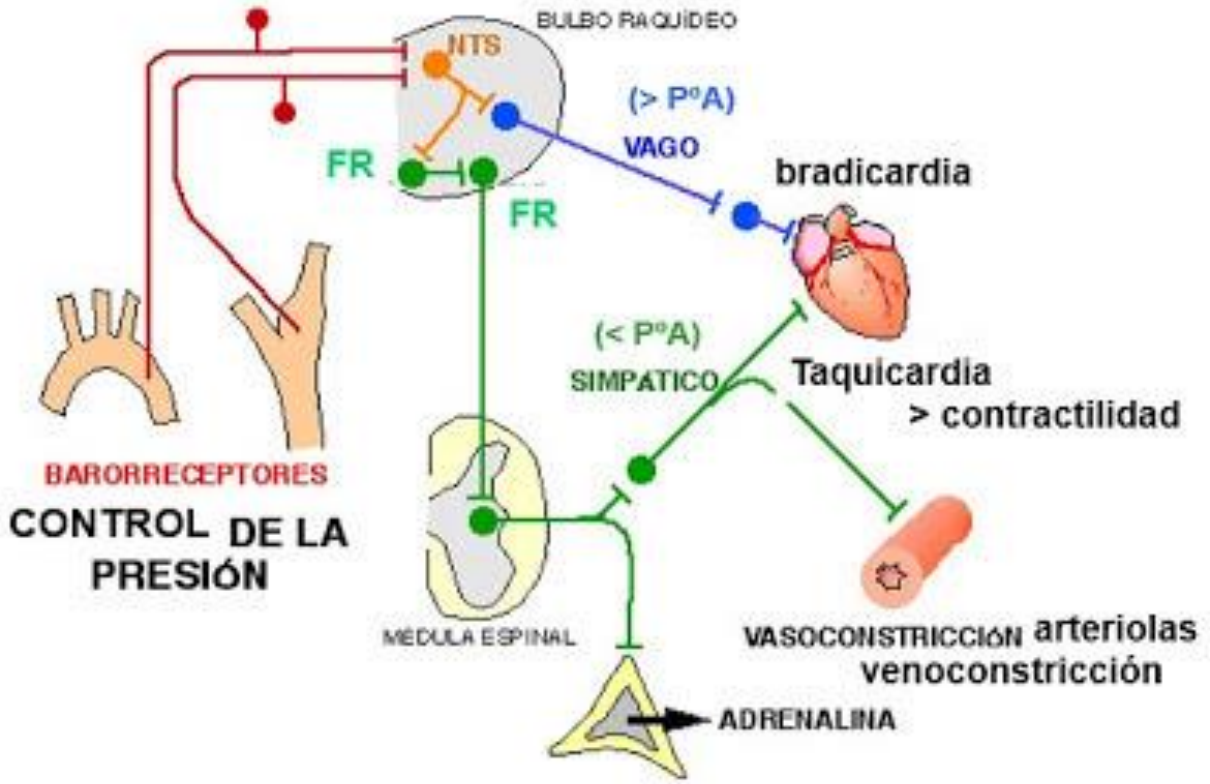
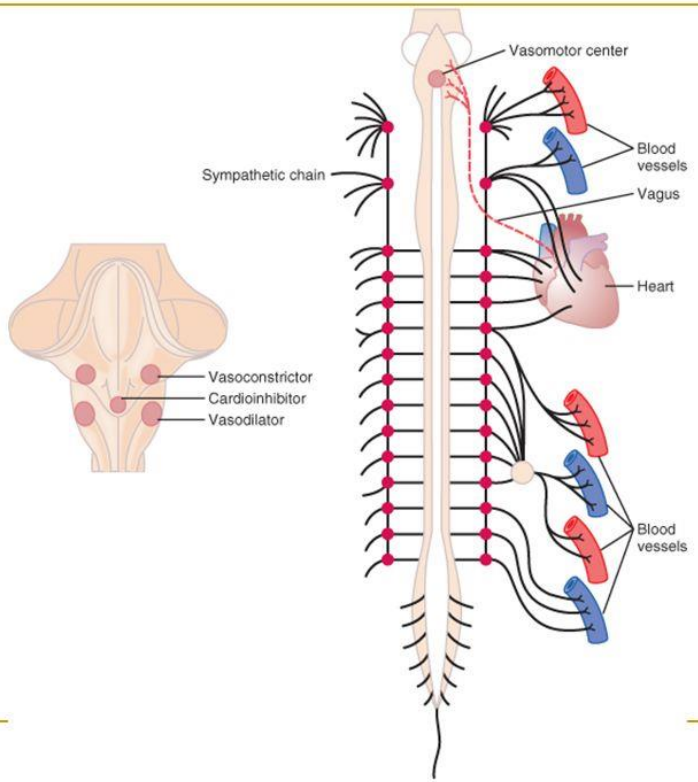


Figura 18–5

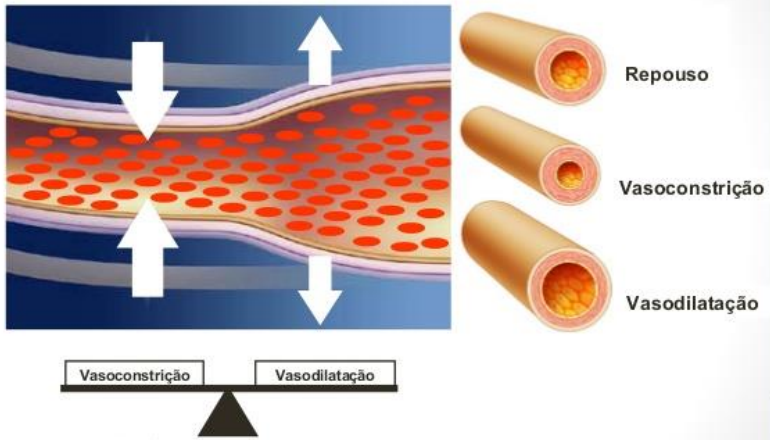
O sistema barorreceptor de controle da pressão arterial.

Reflejo barorreceptor





Vasoconstrição x Vasodilatação



O **Tônus Vascular** é determinado pela competição entre os diferentes agentes vasodilatadores e vasoconstritores sobre o vaso sanguíneo.

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Note that hypotension may be exacerbated by venous pooling during exercise (exercise-induced), after meals (postprandial hypotension), and after prolonged bed rest
(deconditioning).

Drug-induced OH (most common cause of OH):

- e.g. vasodilators, diuretics, phenothiazine, antidepressants

Volume depletion:

- haemorrhage, diarrhoea, vomiting, etc.

Primary autonomic failure (neurogenic OH):

- pure autonomic failure, multiple system atrophy, Parkinson's disease, dementia with Lewy bodies

Secondary autonomic failure (neurogenic OH):

- diabetes, amyloidosis, spinal cord injuries, auto-immune autonomic neuropathy, paraneoplastic autonomic neuropathy, kidney failure

Syncope due to OH

- While or after standing
- Prolonged standing
- Standing after exertion
- Post-prandial hypotension
- Temporal relationship with start or changes of dosage of vasodepressive drugs or diuretics leading to hypotension
- Presence of autonomic neuropathy or parkinsonism

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- atrioventricular conduction system disease
Tachycardia:
- supraventricular
- ventricular
Structural cardiac: aortic stenosis, acute myocardial infarction/ischaemia, hypertrophic cardiomyopathy, cardiac masses (atrial myxoma, tumours, etc.), pericardial disease/tamponade, congenital anomalies of coronary arteries, prosthetic valve dysfunction
Cardiopulmonary and great vessels: pulmonary embolus, acute aortic dissection, pulmonary hypertension

Cardiac syncope

Arrhythmia as primary cause:

Bradycardia:

- sinus node dysfunction (including bradycardia/tachycardia syndrome)
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- ventricular

Structural cardiac: aortic stenosis, acute myocardial infarction/ischaemia, hypertrophic cardiomyopathy, cardiac masses (atrial myxoma, tumours, etc.), pericardial disease/tamponade, congenital anomalies of coronary arteries, prosthetic valve dysfunction

Cardiopulmonary and great vessels: pulmonary embolus, acute aortic dissection, pulmonary hypertension

Cardiac syncope

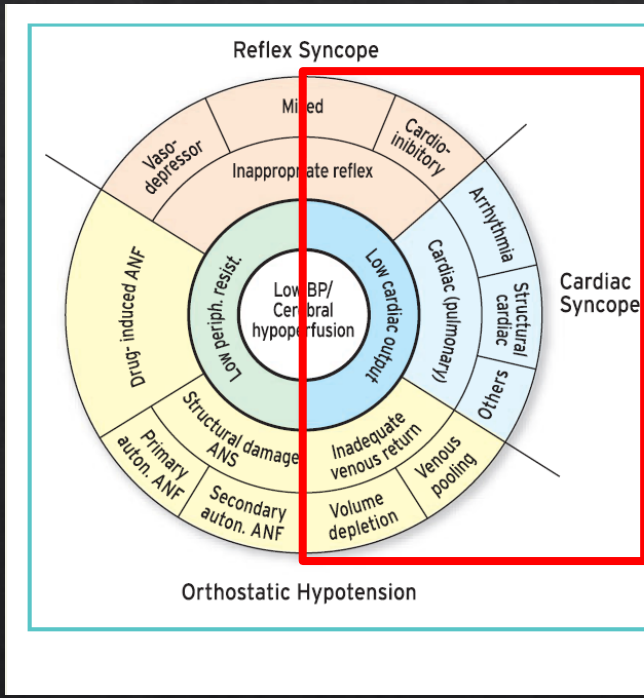
- During exertion or when supine
- Sudden onset palpitation immediately followed by syncope
- Family history of unexplained sudden death at young age
- Presence of structural heart disease or coronary artery disease

- ECG findings suggesting arrhythmic syncope:
  - Bifascicular block (defined as either left or right BBB combined with left anterior or left posterior fascicular block)
  - Other intraventricular conduction abnormalities (QRS duration ≥0.12 s)
  - Mobitz I second-degree AV block and 1° degree AV block with markedly prolonged PR interval
  - Asymptomatic mild inappropriate sinus bradycardia (40–50 b.p.m.) or slow atrial fibrillation (40–50 b.p.m.) in the absence of negatively chronotropic medications
  - Non-sustained VT
  - Pre-excited QRS complexes
  - Long or short QT intervals
  - Early repolarization
  - ST-segment elevation with type 1 morphology in leads V1-V3 (Brugada pattern)
  - Negative T waves in right precordial leads, epsilon waves suggestive of ARVC
  - Left ventricular hypertrophy suggesting hypertrophic cardiomyopathy

Diagnostic criteria with initial evaluation		
VVS is highly probable if syncope is precipitated by pain, fear, or standing, and is associated with typical progressive prodrome (pallor, sweating, and/or nausea).[8,13–17]	I	C
Situational reflex syncope is highly probable if syncope occurs during or immediately after specific triggers listed in *Table 3*.[8,13–17]	I	C
Syncope due to OH is confirmed when syncope occurs while standing and there is concomitant OH.[18–24]	I	C
Arrhythmic syncope is highly probable when the ECG shows[25–39]: • Persistent sinus bradycardia <40 b.p.m. or sinus pauses >3 s in the awake state and in the absence of physical training. • Mobitz II second- and third-degree AV block. • Alternating left and right BBB. • VT or rapid paroxysmal SVT. • Non-sustained episodes of polymorphic VT and long or short QT interval. • Pacemaker or ICD malfunction with cardiac pauses.	I	C

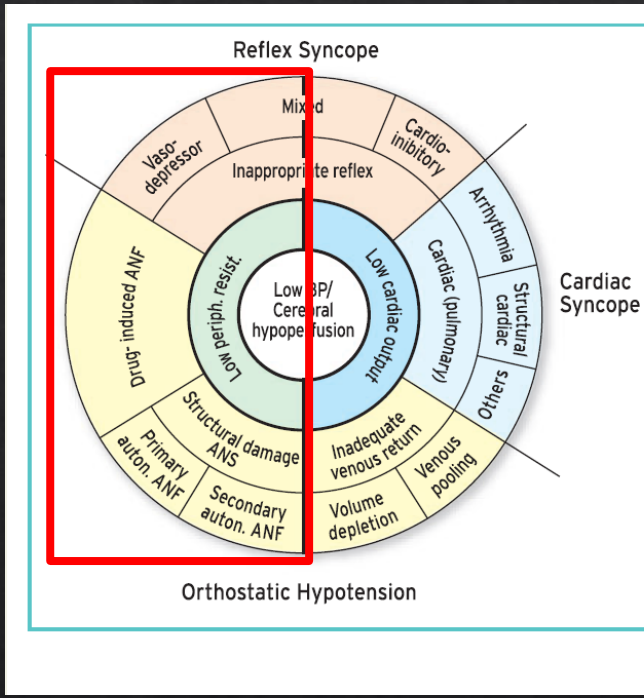
Quatro causas principais de queda do Débito cardíaco

- 1- Bradicardia reflexa (síncope reflexa cardionibitória)
- 2- Causas cardiovasculares (arritmias, TEP, Hipertensão pulmonar)
- 3- Retorno venoso inadequado (depleção de volume)
- 4- Disfunção autonômica (cronotropismo e inotropismo inadequados)



Três causas principais de queda da resistência periférica

- 1- Vasodepressão reflexa (síncope reflexa vasomotora – inibição do tônus simpático)
- 2- Drogas levando a disfunção do SNA (antipsicóticos, antidepressivos, álcool ...)
- 3- Disfunção autonômica primária e secundária (vasoconstrição simpática insuficiente em resposta a posição vertical)



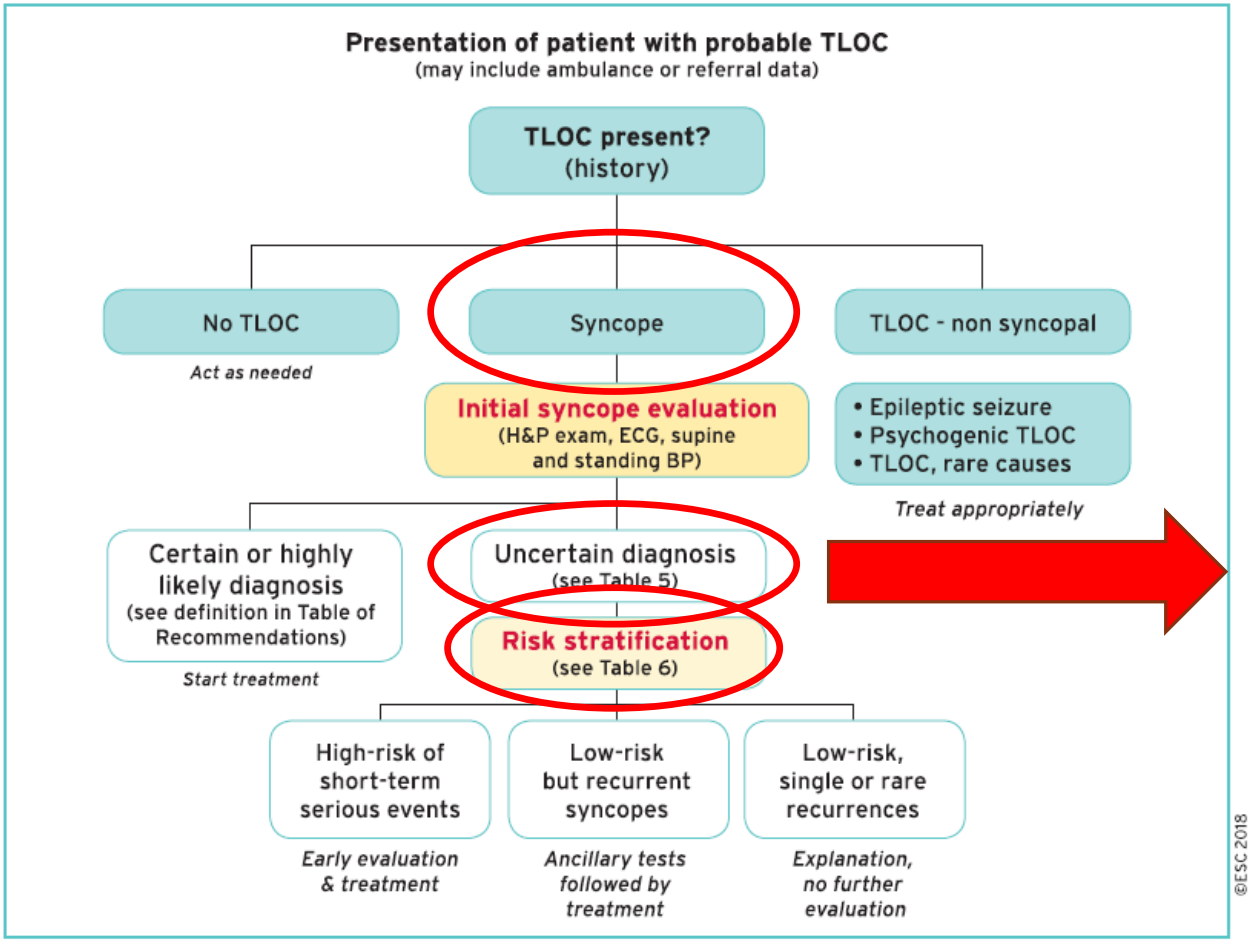


Figure 4 Flow diagram for the initial evaluation and risk stratification of patients with syncope. BP = blood pressure; ECG = electrocardiogram; H&P exam = history and physical examination; TLOC = transient loss of consciousness.

Table 5 Clinical features that can suggest a diagnosis on initial evaluation

Reflex syncope

- Long history of recurrent syncope, in particular occurring before the age of 40 years
- After unpleasant sight, sound, smell, or pain
- Prolonged standing
- During meal
- Being in crowded and/or hot places
- Autonomic activation before syncope: pallor, sweating, and/or nausea/vomiting
- With head rotation or pressure on carotid sinus (as in tumours, shaving, tight collars)
- Absence of heart disease

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  - Early repolarization
  - ST-segment elevation with type 1 morphology in leads V1-V3 (Brugada pattern)
  - Negative T waves in right precordial leads, epsilon waves suggestive of ARVC
  - Left ventricular hypertrophy suggesting hypertrophic cardiomyopathy

ARVC = arrhythmogenic right ventricular cardiomyopathy; AV = atrioventricular; BBB = bundle branch block; b.p.m. = beats per minute; ECG = electrocardiogram; OH = orthostatic hypotension; VT = ventricular tachycardia.

Table 6 High-risk features (that suggest a serious condition) and low-risk features (that suggest a benign condition) in patients with syncope at initial evaluation in the emergency department

SYNCOPAL EVENT
Low-risk
• Associated with prodrome typical of reflex syncope (e.g. light-headedness, feeling of warmth, sweating, nausea, vomiting)[36,49] • After sudden unexpected unpleasant sight, sound, smell, or pain[36,49,50] • After prolonged standing or crowded, hot places[36] • During a meal or postprandial[51] • Triggered by cough, defaecation, or micturition[52] • With head rotation or pressure on carotid sinus (e.g. tumour, shaving, tight collars)[53] • Standing from supine/sitting position[54]
High-risk
Major
• New onset of chest discomfort, breathlessness, abdominal pain, or headache[26,44,55] • Syncope during exertion or when supine[36] • Sudden onset palpitation immediately followed by syncope[36]
Minor (high-risk only if associated with structural heart disease or abnormal ECG):
• No warning symptoms or short (<10 s) prodrome[36,38,49,56] • Family history of SCD at young age[57] • Syncope in the sitting position[54]
PAST MEDICAL HISTORY
Low-risk
• Long history (years) of recurrent syncope with low-risk features with the same characteristics of the current episode[58] • Absence of structural heart disease[27,58]
High-risk
Major
• Severe structural or coronary artery disease (heart failure, low LVEF or previous myocardial infarction)[26,27,35,55,59]
PHYSICAL EXAMINATION
Low-risk
• Normal examination

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High-risk
Major
• New onset of chest discomfort, breathlessness, abdominal pain, or headache[26, 44, 55] • Syncope during exertion or when supine[36] • Sudden onset palpitation immediately followed by syncope[36]
Minor (high-risk only if associated with structural heart disease or abnormal ECG):
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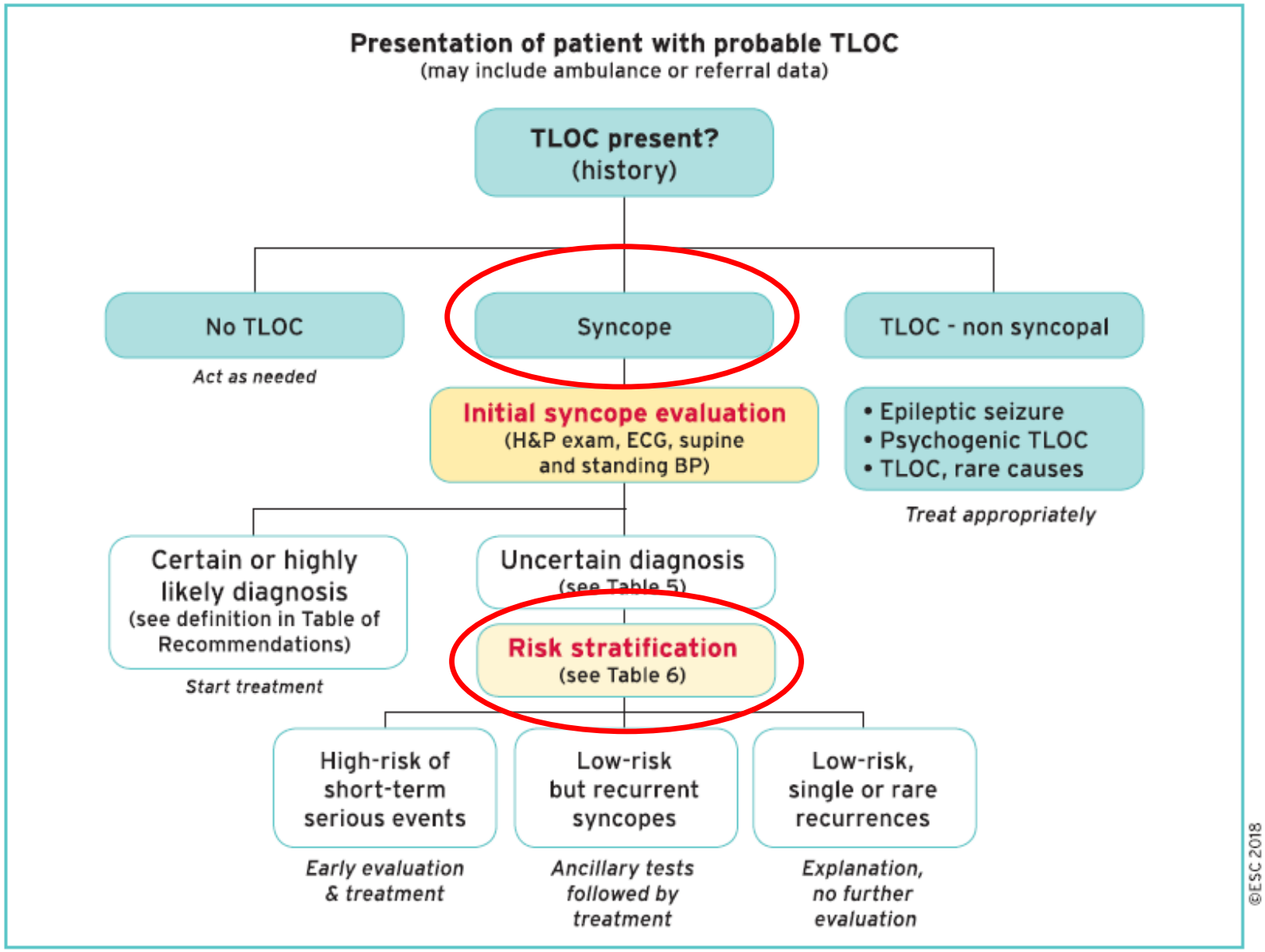
High-risk
Major
• Severe structural or coronary artery disease (heart failure, low LVEF or previous myocardial infarction)[26, 27, 35, 55, 59]
PHYSICAL EXAMINATION
Low-risk
• Normal examination
High-risk
Major
• Unexplained systolic BP in the ED <90 mmHg[26, 55] • Suggestion of gastrointestinal bleed on rectal examination[44] • Persistent bradycardia (<40 b.p.m.) in awake state and in absence of physical training • Undiagnosed systolic murmur[60]

ECG[a]	
Low-risk	
• Normal ECG[26, 35, 36, 55]	
High-risk	
Major	**Minor** (high-risk only if history consistent with arrhythmic syncope)
• ECG changes consistent with acute ischaemia • Mobitz II second- and third-degree AV block • Slow AF (<40 b.p.m.) • Persistent sinus bradycardia (<40 b.p.m.), or repetitive sinoatrial block or sinus pauses >3 seconds in awake state and in absence of physical training • Bundle branch block, intraventricular conduction disturbance, ventricular hypertrophy, or Q waves consistent with ischaemic heart disease or cardiomyopathy[44, 56] • Sustained and non-sustained VT • Dysfunction of an implantable cardiac device (pacemaker or ICD) • Type 1 Brugada pattern • ST-segment elevation with type 1 morphology in leads V1–V3 (Brugada pattern) • QTc >460 ms in repeated 12-lead ECGs indicating LQTS[46]	• Mobitz I second-degree AV block and 1°degree AV block with markedly prolonged PR interval • Asymptomatic inappropriate mild sinus bradycardia (40–50 b.p.m.), or slow AF (40–50 b.p.m.)[56] • Paroxysmal SVT or atrial fibrillation[50] • Pre-excited QRS complex • Short QTc interval (≤340 ms)[46] • Atypical Brugada patterns[46] • Negative T waves in right precordial leads, epsilon waves suggestive of ARVC[46]



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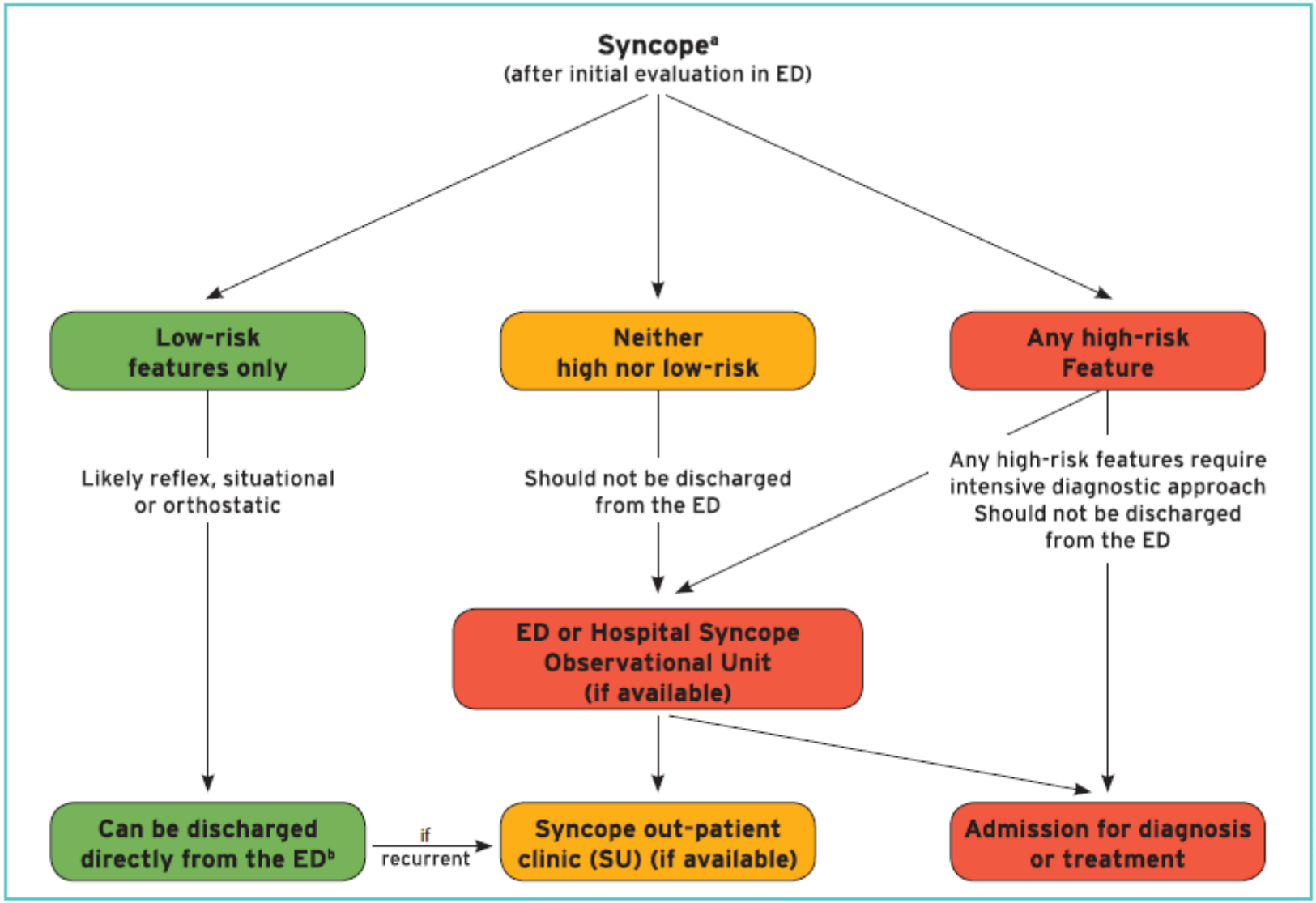
Syncope[a]
(after initial evaluation in ED)
Low-risk features only
Neither high nor low-risk
Any high-risk Feature
Likely reflex, situational or orthostatic
Should not be discharged from the ED
Any high-risk features require intensive diagnostic approach
Should not be discharged from the ED
ED or Hospital Syncope Observational Unit (if available)
Can be discharged directly from the ED[b]
if recurrent
Syncope out-patient clinic (SU) (if available)
Admission for diagnosis or treatment
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Management of syncope in the ED		
It is recommended that patients with low-risk features, likely to have reflex or situational syncope or syncope due to OH, are discharged from the ED.[27,35,36,49–54,58,62,69]	I	B
It is recommended that patients with high-risk features receive an early intensive prompt evaluation in a syncope unit or in an ED observation unit (if available), or are hospitalized.[26,27,35,36,44–46,50,55–57,59,60,70–76]	I	B
It is recommended that patients who have neither high- nor low-risk features are observed in the ED or in a syncope unit instead of being hospitalized.[40,63–65,77]	I	B

Quando internar o paciente ?

OESIL Risk Score

NHS Grampian

- 4 characteristics
  - Age > 65yrs
  - Hx of cardiovascular disease
  - Syncope without prodrome
  - Abnormal ECG
- 12-month mortality
  - Score 0 0%
  - Score 1 0.8%
  - Score 2 19.6%
  - Score 3 34.7%
  - Score 4 57.1%

European Heart Journal 2003;24:811-819

Emergency Medicine Junior Teaching Programme
Aberdeen Royal Infirmary

Exames para diagnóstico

- 1- Massagem do seio carotídeo

CSM is indicated in patients >40 years of age with syncope of unknown origin compatible with a reflex mechanism.[92–94]	I	B
Diagnostic criteria		
CSS is confirmed if CSM causes bradycardia (asystole) and/or hypotension that reproduce spontaneous symptoms, and patients have clinical features compatible with a reflex mechanism of syncope.[89,90,92,93,98–102]	I	B

- Although neurological complications are very rare,[90,95–97] the risk of provocation of TIA with the massage suggests that CSM should be undertaken with caution in patients with previous TIA, stroke, or known carotid stenosis >70%.

Exames para diagnóstico

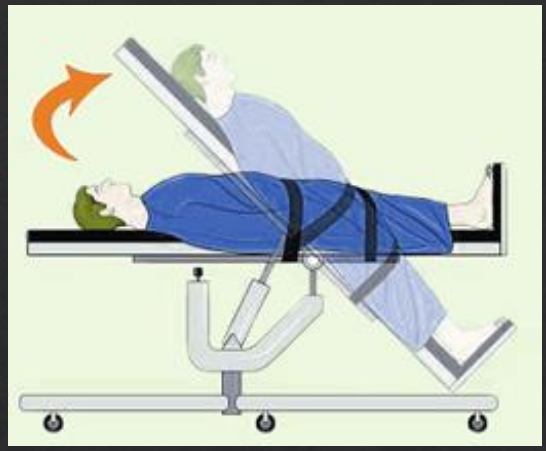
- 2- Mudança postural (pesquisa de hipotensão ortostática)

Intermittent determination by sphygmomanometer of BP and HR while supine and during active standing for 3 min are indicated at initial syncope evaluation.[20,103,104]	I	C

Diagnostic criteria		
Syncope due to OH is confirmed when there is a fall in systolic BP from baseline value ≥20 mmHg or diastolic BP ≥10 mmHg, or a decrease in systolic BP to <90 mmHg that reproduces spontaneous symptoms.[6,20,103,104]	I	C

Exames para diagnóstico

- 3- Tilt test



Tilt testing

Recommendations	Class[a]	Level[b]
Indications		
Tilt testing should be considered in patients with suspected reflex syncope, OH, POTS, or PPS.[23,24,105–109,111–117]	IIa	B
Tilt testing may be considered to educate patients to recognize symptoms and learn physical manoeuvres.[119–121]	IIb	B
Diagnostic criteria		
Reflex syncope, OH, POTS, or PPS should be considered likely if tilt testing reproduces symptoms along with the characteristic circulatory pattern of these conditions.[23,24,105–109,111–117]	IIa	B

EEG = electroencephalogram; OH = orthostatic hypotension; POTS = postural orthostatic tachycardia syndrome; PPS = psychogenic pseudosyncope; VVS = vasovagal syncope.

[a]Class of recommendation.

[b]Level of evidence.

Exames para diagnóstico

- 4-Monitorização eletrocardiográfica

Immediate in-hospital monitoring (in bed or by telemetry) is indicated in high-risk patients (defined in *Table 6*).	I	C
Holter monitoring should be considered in patients who have frequent syncope or presyncope (≥1 episode per week).[161]	IIa	B
External loop recorders should be considered, early after the index event, in patients who have an inter-symptom interval ≤4 weeks.[162,166,168,201]	IIa	B
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 6*), and a high likelihood of recurrence within the battery life of the device.[175,176,181–184,202], *Supplementary Data Table 5*	I	A
ILR is indicated in patients with high-risk criteria (listed in *Table 6*) in whom a comprehensive evaluation did not demonstrate a cause of syncope or lead to a specific treatment, and who do not have conventional indications for primary prevention ICD or pacemaker indication.[174,180,187,188,195], *Supplementary Data Tables 5 and 6*	I	A
Diagnostic criteria		
Arrhythmic syncope is confirmed when a correlation between syncope and an arrhythmia (bradyarrhythmia or tachyarrhythmia) is detected.[172,184–186,188,200]	I	B
In the absence of syncope, arrhythmic syncope should be considered likely when periods of Mobitz II second- or third-degree AV block or a ventricular pause >3 s (with the possible exception of young trained persons, during sleep or rate-controlled atrial fibrillation), or rapid prolonged paroxysmal SVT or VT are detected.[185,188,197–199]	IIa	C

Exames para diagnóstico

- 5- Estudo eletrofisiológico

In patients with syncope and previous myocardial infarction, or other scar-related conditions, EPS is indicated when syncope remains unexplained after non-invasive evaluation.[218]	I	B
In patients with syncope and bifascicular BBB, EPS should be considered when syncope remains unexplained after non-invasive evaluation.[188,214–217,221]	IIa	B
EPS-guided therapy		
In patients with unexplained syncope and bifascicular BBB, a pacemaker is indicated in the presence of either a baseline H-V interval of ≥70 ms, second- or third-degree His-Purkinje block during incremental atrial pacing, or with pharmacological challenge.[188,214–217,221]	I	B
In patients with unexplained syncope and previous myocardial infarction, or other scar-related conditions, it is recommended that induction of sustained monomorphic VT is managed according to the current ESC Guidelines for VA.[46]	I	B

- EPS is generally not useful in patients with syncope, normal ECG, no heart disease, and no palpitations.

Exames para diagnóstico

- 6- Ecocardiograma

Echocardiography is indicated for diagnosis and risk stratification in patients with suspected structural heart disease.[235,236]	I	B

Diagnostic criteria		
Aortic stenosis, obstructive cardiac tumours or thrombi, pericardial tamponade, and aortic dissection are the most probable causes of syncope when the ECG shows the typical features of these conditions.[237–244]	I	C

Exames para diagnóstico

- 7- Teste ergométrico

Indications		
Exercise testing is indicated in patients who experience syncope during or shortly after exertion.	I	C
Diagnostic criteria		
Syncope due to second- or third-degree AV block is confirmed when the AV block develops during exercise, even without syncope.[253–257]	I	C
Reflex syncope is confirmed when syncope is reproduced immediately after exercise in the presence of severe hypotension.[250–252]	I	C
Additional advice and clinical perspectives There are no data supporting routine exercise testing in patients with syncope.		

Exames para diagnóstico

- 8- Cineangiocoronariografia

Indications		
In patients with syncope, the same indications for coronary angiography should be considered as in patients without syncope.[258]	IIa	C
Additional advice and clinical perspectives Angiography alone is not diagnostic of the cause of syncope.		

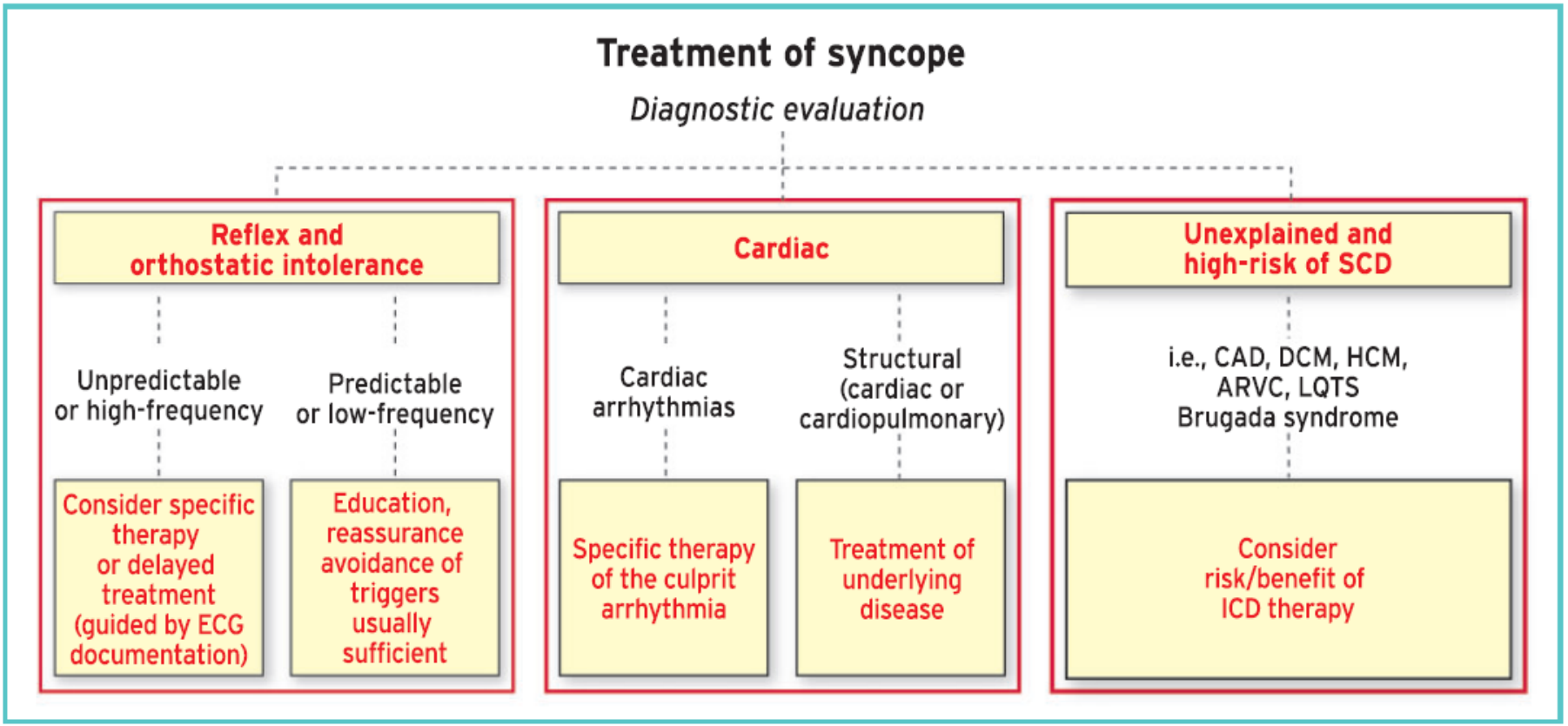
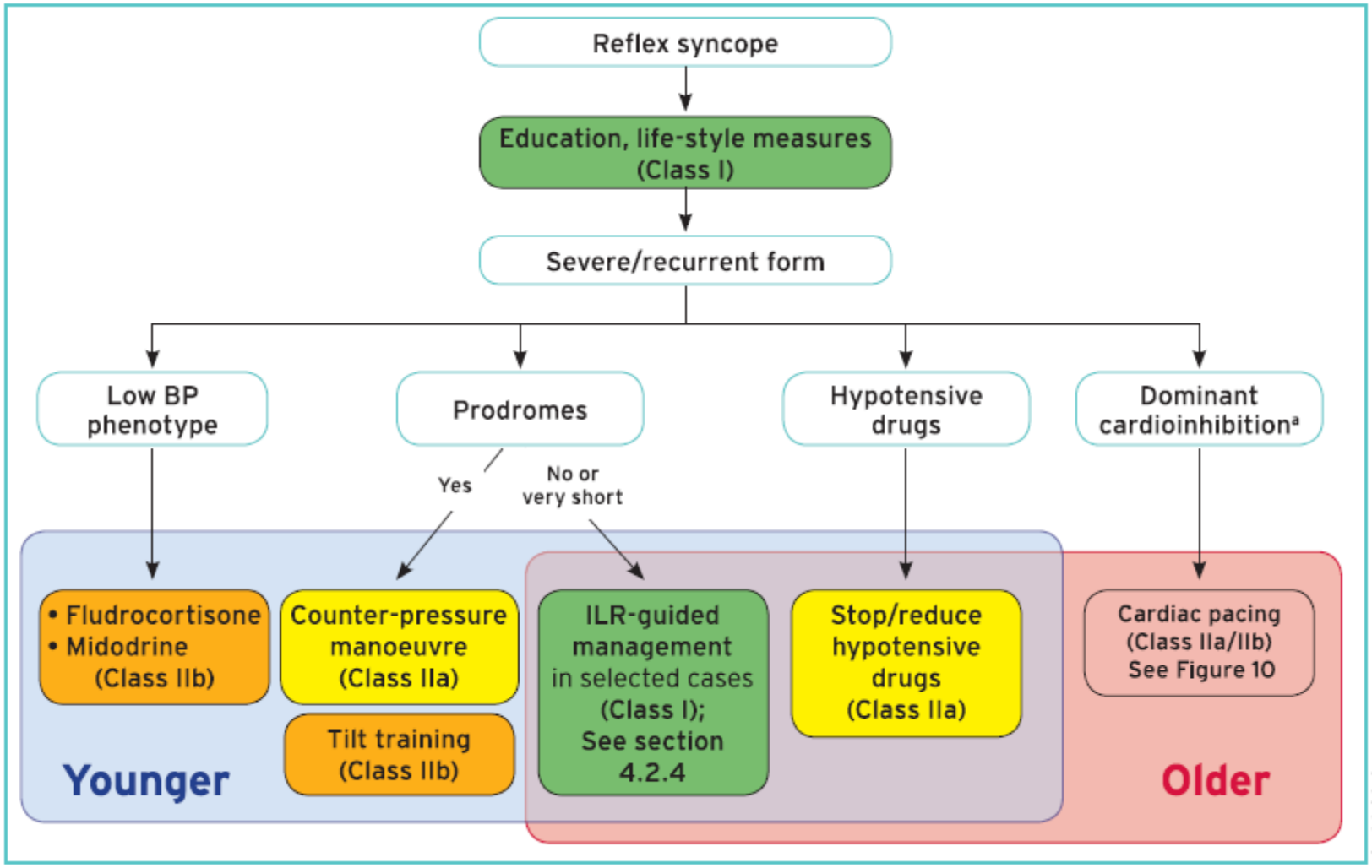


Figure 8 General framework of treatment is based on risk stratification and the identification of specific mechanisms when possible. ARVC = arrhythmogenic right ventricular cardiomyopathy; CAD = coronary artery disease; DCM = dilated cardiomyopathy; ECG = electrocardiographic; HCM = hypertrophic cardiomyopathy; ICD = implantable cardioverter defibrillator; LQTS = long QT syndrome; SCD = sudden cardiac death.


Reflex syncope
Education, life-style measures (Class I)
Severe/recurrent form
Low BP phenotype
Prodromes
Hypotensive drugs
Dominant cardioinhibition[a]
Yes
No or very short
• Fludrocortisone
• Midodrine
(Class IIb)
Counter-pressure manoeuvre (Class IIa)
Tilt training (Class IIb)
ILR-guided management in selected cases (Class I); See section 4.2.4
Stop/reduce hypotensive drugs (Class IIa)
Cardiac pacing (Class IIa/IIb) See Figure 10
Younger
Older
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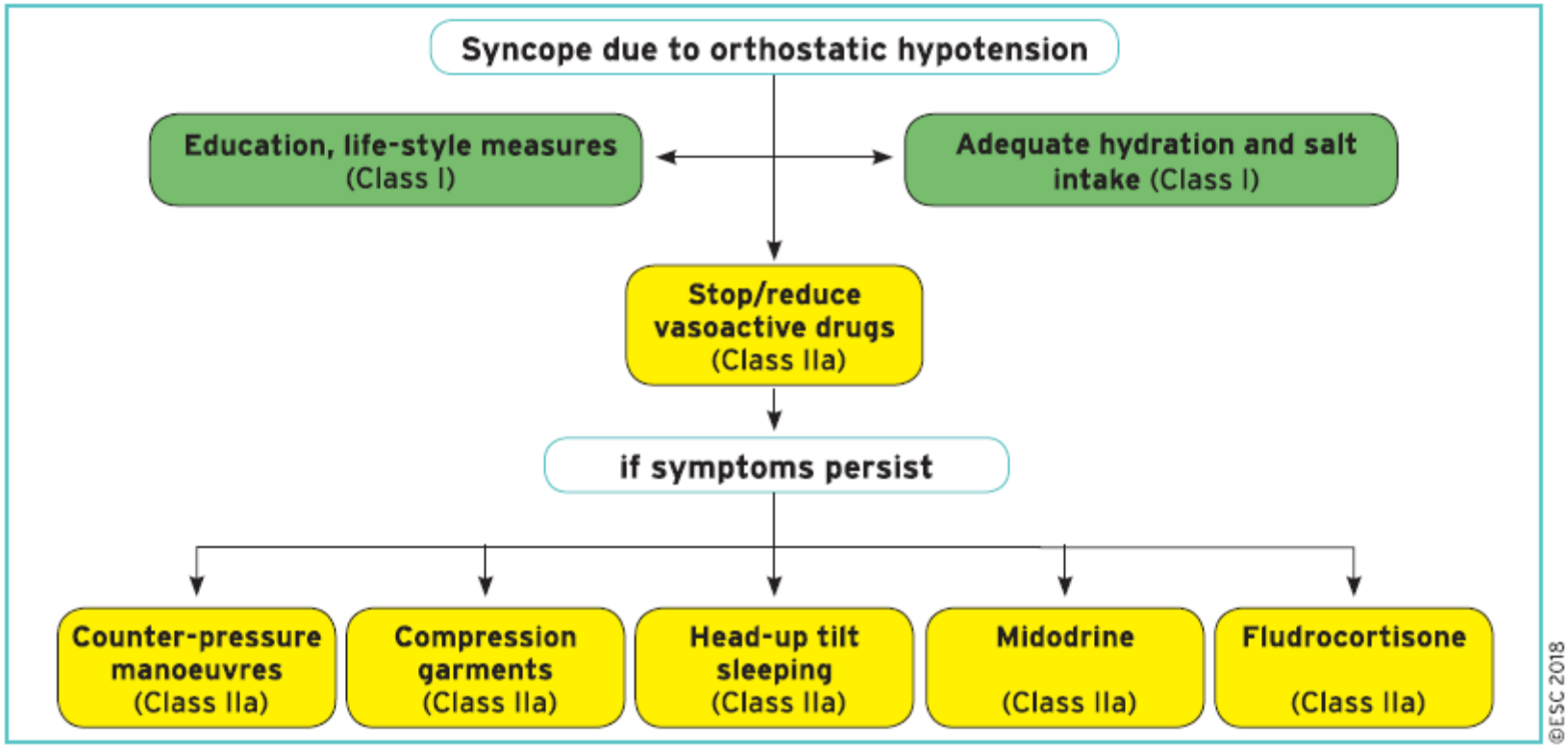
Treatment of reflex syncope		
Explanation of the diagnosis, provision of reassurance, and explanation of the risk of recurrence and the avoidance of triggers and situations are indicated in all patients. *Supplementary Data Table 10*	I	B
Beta-adrenergic blocking drugs are not indicated.[279,280]	III	A
Cardiac pacing is not indicated in the absence of a documented cardioinhibitory reflex.[299,300]	III	B


Syncope due to orthostatic hypotension
Education, life-style measures (Class I)
Adequate hydration and salt intake (Class I)
Stop/reduce vasoactive drugs (Class IIa)
if symptoms persist
Counter-pressure manoeuvres (Class IIa)
Compression garments (Class IIa)
Head-up tilt sleeping (Class IIa)
Midodrine (Class IIa)
Fludrocortisone (Class IIa)
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Treatment of OH		
Explanation of the diagnosis, provision of reassurance, and explanation of the risk of recurrence and the avoidance of triggers and situations are indicated in all patients.	I	C
Adequate hydration and salt intake are indicated.[310,311]	I	C

Treatment of orthostatic hypotension

Recommendations	Class[a]	Level[b]
Explanation of the diagnosis, the provision of reassurance, and explanation of the risk of recurrence and the avoidance of triggers and situations are indicated in all patients.	I	C
Adequate hydration and salt intake are indicated.[310,311]	I	C
Modification or discontinuation of hypotensive drug regimens should be considered.[312–318]	IIa	B
Isometric PCM should be considered.[319]	IIa	C
Abdominal binders and/or support stockings to reduce venous pooling should be considered.[23,320,321]	IIa	B
Head-up tilt sleeping (>10 degrees) to increase fluid volume should be considered.[104,322,323]	IIa	C
Midodrine should be considered if symptoms persist.[324–326]	IIa	B
Fludrocortisone should be considered if symptoms persist.[322,327,328]	IIa	C

Additional advice and clinical perspectives

- In individuals with established OH and risk factors for falls, aggressive BP-lowering treatment should be avoided; their treatment targets should be revised to a systolic BP value of 140–150 mmHg and medication withdrawal should be considered.
- The BP-lowering agents (angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and calcium channel blockers) should be used preferentially, especially among patients at high risk of falls, as diuretics and beta-blockers are associated with OH and falls and should be avoided in at-risk individuals.

BP = blood pressure; OH = orthostatic hypotension; PCM = physical counter-pressure manoeuvres.
[a]Class of recommendation.

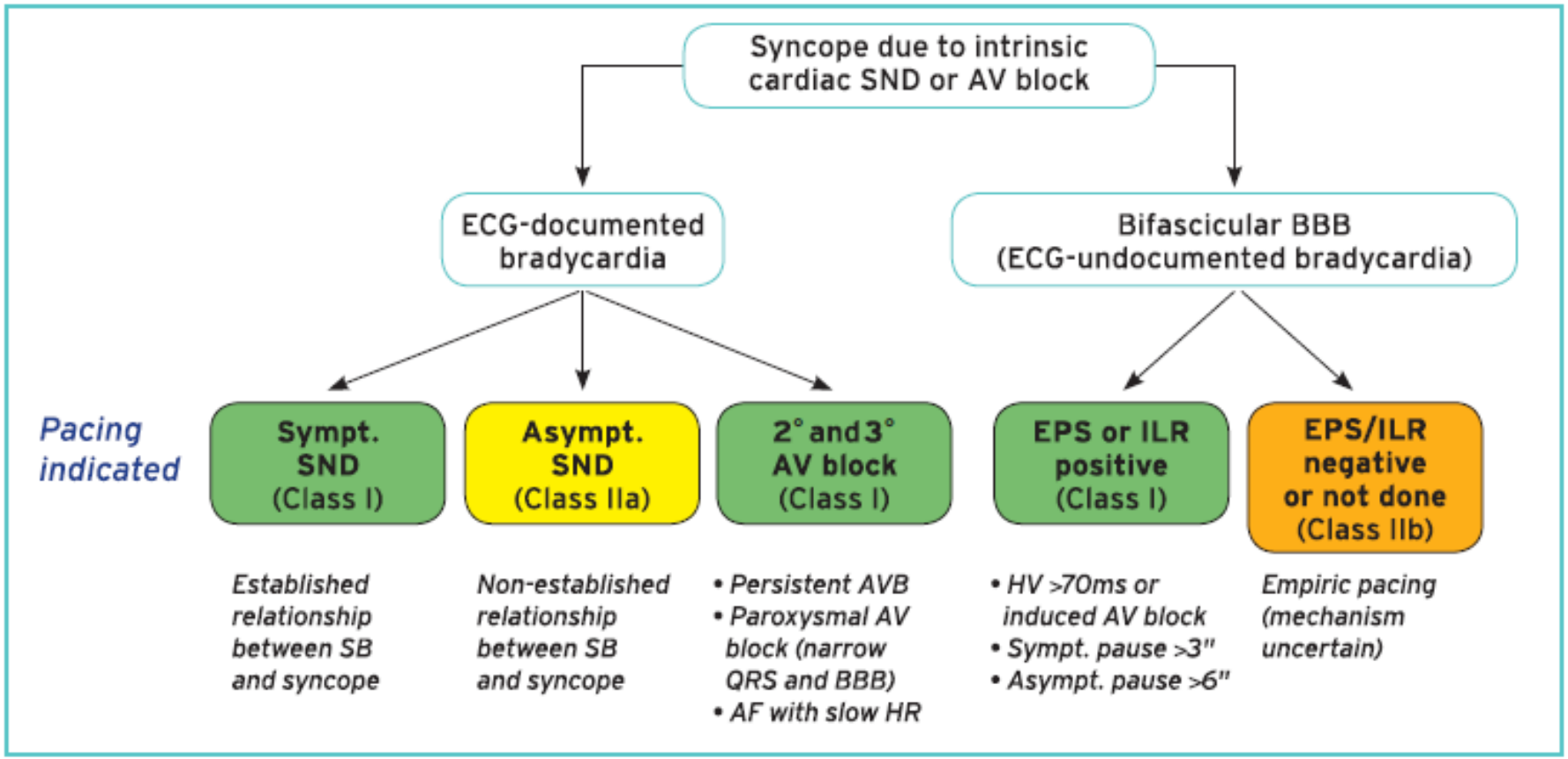

Figure 13 Summary of indications for pacing in patients with syncope due to intrinsic cardiac bradycardia. AF = atrial fibrillation; asympt. = asymptomatic; AV = atrioventricular; BBB = bundle branch block; ECG = electrocardiogram; EPS = electrophysiological study; HR = heart rate; ILR = implantable loop recorder; SB = sinus bradycardia; SND = sinus node dysfunction; sympt. = symptomatic.

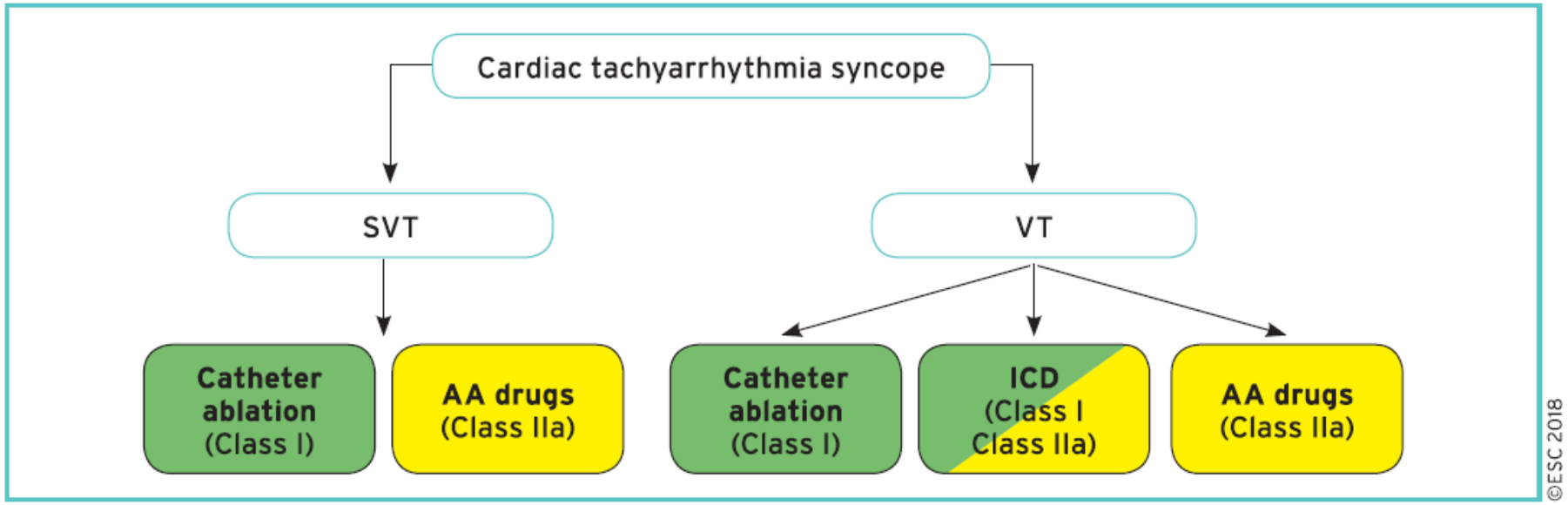

Figure 15 Choice of therapy for patients presenting with syncope due to cardiac tachyarrhythmias as the primary cause. AA = antiarrhythmic; ICD = implantable cardioverter defibrillator; SVT = supraventricular tachycardia; VT = ventricular tachycardia.

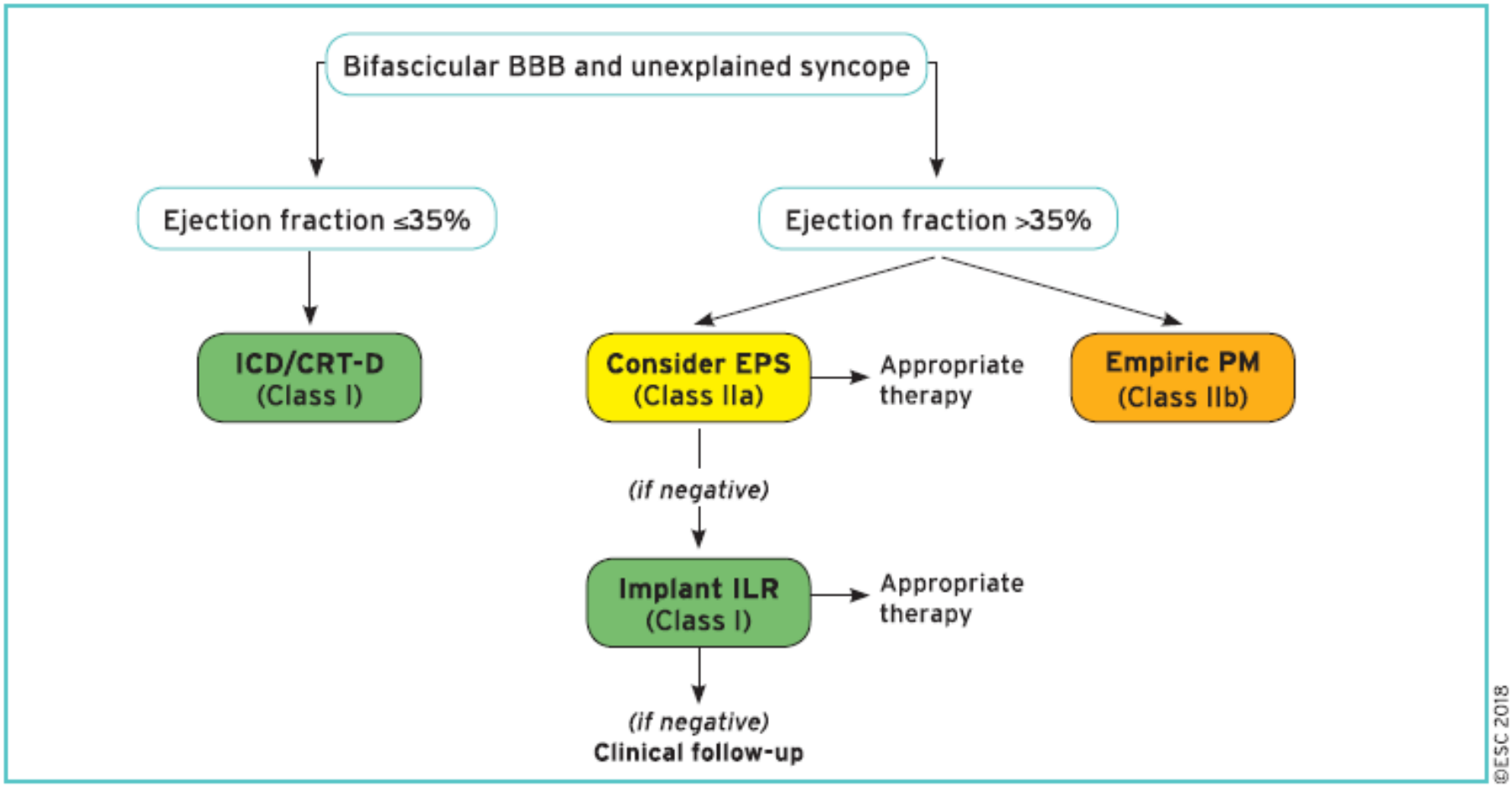

Figure 14 Therapeutic algorithm for patients presenting with unexplained syncope and bundle branch block. BBB = bundle branch block; CRT-D = cardiac resynchronization therapy defibrillator; EPS = electrophysiological study; ICD = implantable cardioverter defibrillator; ILR = implantable loop recorder; PM = pacemaker.

Table 10 Differentiating syncope from epileptic seizures[9,50,410,411]

Clinical feature	Syncope	Epileptic seizures
Useful features		
Presence of trigger	Very often	Rare
Nature of trigger	Differs between types: pain, standing, emotions for VVS; specific trigger for situational syncope; standing for OH	Flashing lights is best known; also range of rare triggers
Prodromes	Often presyncope (autonomic activation in reflex syncope, light-headedness in OH, palpitations in cardiac syncope)	Epileptic aura: repetitive, specific for each patient. Includes *déjà vu*. Rising sensation in the abdomen (epigastric aura) and/or an unusual unpleasant smell
Detailed characteristics of myoclonus	• <10, irregular in amplitude, asynchronous, asymmetrical • Starts after the onset of LOC	• 20–100, synchronous, symmetrical, hemilateral • The onset mostly coincides with LOC • Clear long-lasting automatisms as chewing or lip smacking at the mouth
Tongue bite	Rare, tip of tongue	Side of tongue (rarely bilateral)
Duration of restoration of consciousness	10–30 seconds	May be many minutes
Confusion after attack	No understanding of situation for <10 seconds in most syncope, full alertness and awareness afterwards	Memory deficit, i.e. repeated questions without imprinting for many minutes
Features of limited utility		
Incontinence	Not uncommon	Common
Presence of myoclonus (see below for nature of myoclonus)	Very often	~60%, dependent on accuracy of observation
Eyes open during LOC	Frequent	Nearly always
Fatigue and sleep afterwards	Common, particularly in children	Very common
Blue face	Rare	Fairly often

LOC = loss of consciousness; OH = orthostatic hypotension; VVS = vasovagal syncope.

Neurological evaluation		
Neurological evaluation is indicated when syncope is suspected to be epilepsy or due to autonomic failure to evaluate the underlying disease.	I	C