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Syncope: An overview of investigation and management

This webinar will start shortly.

Syncope: An overview of investigation and management

Zoom webinar – Wednesday 27 May 6.30-8pm

Acknowledgement of traditional owners

We acknowledge the Tasmanian Aboriginal people as the traditional owners and ongoing custodians of the land on which we are meeting today. We pay our respects to Elders past and present.

We would also like to acknowledge Aboriginal people who are joining us today.

Learning outcomes

After this session, I will be able to:

- Provide an overview of types and mechanisms of syncope.
- Use a structured, risk-based approach to assess syncope in general practice, distinguishing patients who require urgent emergency referral from those suitable for outpatient assessment or reassurance.
- Select appropriate initial investigations for patients presenting with syncope, including ECGs and non-invasive cardiac investigations, based on clinical presentation.
- Explain the role, strengths and limitations of contemporary cardiac investigations, including 12 lead ECG, Holter/loop recorder monitoring and echocardiography.
- Provide an overview of management of syncope, from reassurance and conservative measures to specialist referral and indications for pacemaker therapy

Some housekeeping

- Tonight's webinar is being recorded
- Please use the Zoom Q&A feature to ask questions
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- Managing atrial fibrillation in primary care: A practical approach for GP's
- How to improve heart failure outcomes
- Lipids 201: Beyond atorvastatin 40
- Chest pain in general practice – assessment, investigation and referral pathways

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Presenters

Dr Peregrine Green
Cardiologist and Electrophysiologist at the Royal Hobart Hospital and Senior Clinical Lecturer at the University of Tasmania

Dr Graeme Bleach
Lead Clinical Editor Tasmanian HealthPathways
Primary Health Tasmania

Syncope: An Overview of Investigation and Management

Primary Health Tasmania: Cardiac Series

27th May 2026

Dr Peregrine Green

Staff Specialist Cardiologist and Electrophysiologist, Royal Hobart Hospital
Senior Clinical Lecturer, University of Tasmania

Learning Outcomes

- Provide an overview of types and mechanisms of syncope
- Use a structured, risk-based approach to assess syncope in General Practice, distinguishing patients who require urgent emergency referral from those suitable for outpatient assessment or reassurance.
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Disclaimer

- I am not an expert in syncope!

ESC European Society of Cardiology
European Heart Journal (2018) **39**, 1883–1948
doi:10.1093/eurheartj/ehy037

ESC GUIDELINES

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)

ESC European Society of Cardiology
European Heart Journal (2018) **39**, e43–e80
doi:10.1093/eurheartj/ehy071

ESC GUIDELINES

Practical Instructions for the 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)

ESC European Society of Cardiology
European Heart Journal (2021) **00**, 1–94
doi:10.1093/eurheartj/ehab364

ESC GUIDELINES

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy

Developed by the Task Force on cardiac pacing and cardiac resynchronization therapy of the European Society of Cardiology (ESC)

With the special contribution of the European Heart Rhythm Association (EHRA)

ACC/AHA/HRS GUIDELINE

2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

Definition of Syncope

- “Syncope is defined as TLOC [Transient Loss of Consciousness] due to cerebral hypoperfusion, characterized by a rapid onset, short duration, and spontaneous complete recovery”

- “TLOC is defined as a state of real or apparent LOC with loss of awareness, characterized by amnesia for the period of unconsciousness, abnormal motor control, loss of responsiveness, and a short duration”

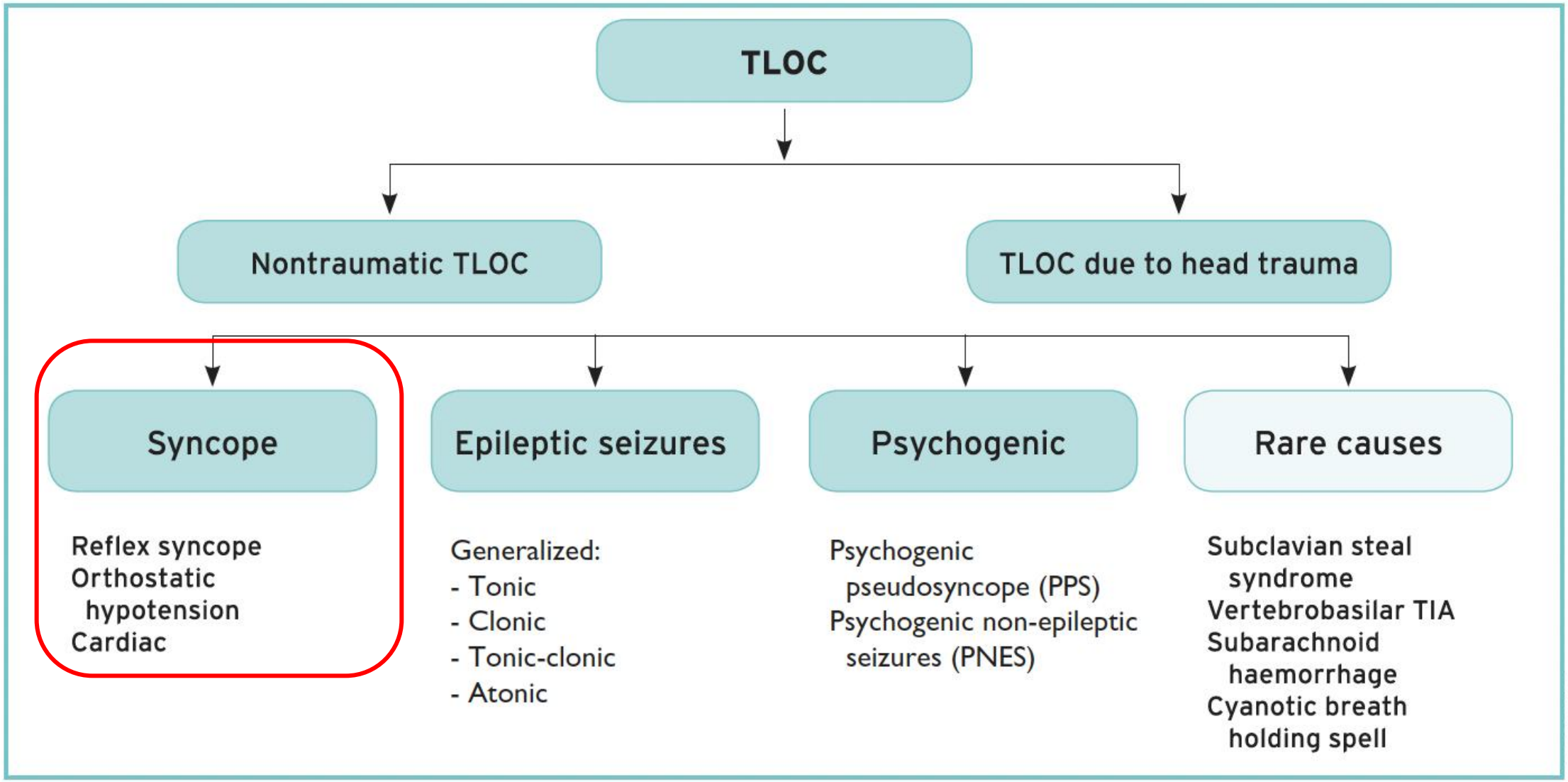
TLOC
Nontraumatic TLOC
TLOC due to head trauma
Syncope
Epileptic seizures
Psychogenic
Rare causes
Reflex syncope
Orthostatic hypotension
Cardiac
Generalized:
- Tonic
- Clonic
- Tonic-clonic
- Atonic
Psychogenic pseudosyncope (PPS)
Psychogenic non-epileptic seizures (PNES)
Subclavian steal syndrome
Vertebrobasilar TIA
Subarachnoid haemorrhage
Cyanotic breath holding spell
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Table 3. Relevant Terms and Definitions*

Term	Definition/Comments and References
Syncope	A symptom that presents with an abrupt, transient, complete loss of consciousness, associated with inability to maintain postural tone, with rapid and spontaneous recovery. The presumed mechanism is cerebral hypoperfusion.[24,30] There should not be clinical features of other nonsyncope causes of loss of consciousness, such as seizure, antecedent head trauma, or apparent loss of consciousness (ie, pseudosyncope).[24,30]
Loss of consciousness	A cognitive state in which one lacks awareness of oneself and one's situation, with an inability to respond to stimuli.
Transient loss of consciousness	Self-limited loss of consciousness[30] can be divided into syncope and nonsyncope conditions. Nonsyncope conditions include but are not limited to seizures, hypoglycemia, metabolic conditions, drug or alcohol intoxication, and concussion due to head trauma. The underlying mechanism of syncope is presumed to be cerebral hypoperfusion, whereas nonsyncope conditions are attributed to different mechanisms.
Presyncope (near-syncope)	The symptoms before syncope. These symptoms could include extreme lightheadedness; visual sensations, such as "tunnel vision" or "graying out"; and variable degrees of altered consciousness without complete loss of consciousness. Presyncope could progress to syncope, or it could abort without syncope.
Unexplained syncope (syncope of undetermined etiology)	Syncope for which a cause is undetermined after an initial evaluation that is deemed appropriate by the experienced healthcare provider. The initial evaluation includes but is not limited to a thorough history, physical examination, and ECG.
Orthostatic intolerance	A syndrome consisting of a constellation of symptoms that include frequent, recurrent, or persistent lightheadedness, palpitations, tremulousness, generalized weakness, blurred vision, exercise intolerance, and fatigue upon standing. These symptoms can occur with or without orthostatic tachycardia, OH, or syncope.[24] Individuals with orthostatic intolerance have ≥1 of these symptoms associated with reduced ability to maintain upright posture.
Orthostatic tachycardia	A sustained increase in heart rate of ≥30 bpm within 10 min of moving from a recumbent to a quiet (nonexertional) standing position (or ≥40 bpm in individuals 12–19 y of age).[24,30,31]

Table 4 **Conditions that may be incorrectly diagnosed as syncope**

Condition	Characteristic features that distinguish from syncope
Generalized seizures	See section 8, *Table 10*.
Complex partial seizures, absence epilepsy	No falls, yet unresponsive and later amnesia
PPS or "pseudocoma"	Duration of apparent LOC lasting many minutes to hours; high frequency, up to several times a day
Falls without TLOC	No unresponsiveness or amnesia
Cataplexy	Falls with flaccid paralysis and non-responsive, yet no later amnesia
Intracerebral or subarachnoid haemorrhage	Consciousness may be progressively reduced rather than immediately lost. Accompanying severe headache, other neurological signs
Vertebrobasilar TIA	Always focal neurological signs and symptoms, usually without LOC; if consciousness is lost this usually lasts longer than in TLOC.
Carotid TIA	Consciousness is for all practical purposes not lost in carotid TIAs, but there are pronounced focal neurological signs and symptoms
Subclavian steal syndrome	Associated with focal neurological signs
Metabolic disorders including hypoglycaemia, hypoxia, hyperventilation with hypocapnia	Duration much longer than in TLOC; consciousness may be impaired instead of lost
Intoxication	Duration much longer than in TLOC; consciousness may be impaired instead of lost
Cardiac arrest	LOC yet no spontaneous recovery
Coma	Duration much longer than TLOC

Differentiating from Epilepsy

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

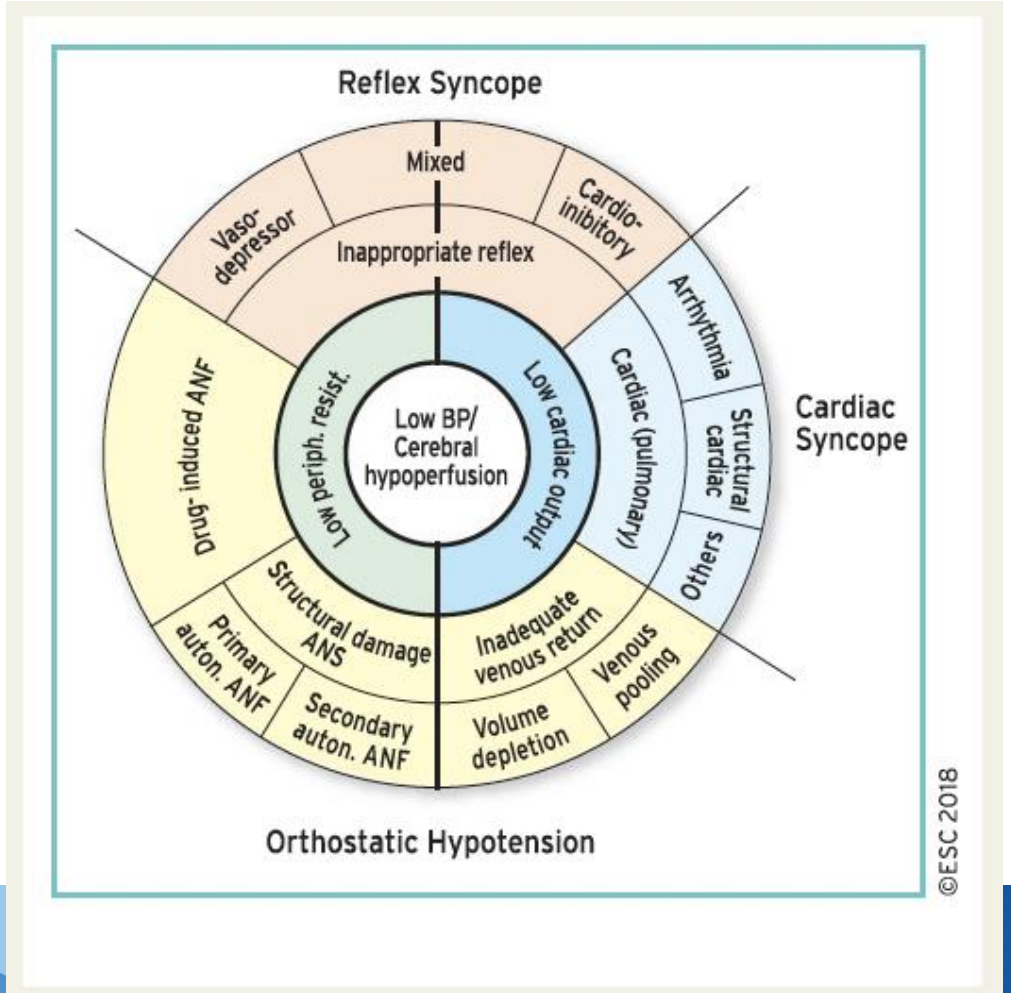
LOC = loss of consciousness; OH = orthostatic hypotension; VVS = vasovagal syncope.

- Syncope is:
  - Situational/triggered
  - With a prodrome (except cardiac)
  - Of short duration
  - With quick recovery

Classification of Syncope

Reflex (neurally mediated) syncope		
Vasovagal: - orthostatic VVS: standing, less common sitting - emotional: fear, pain (somatic or visceral), instrumentation, blood ph 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)	Vasovagal syncope (VVS)	The most common form of reflex syncope mediated by the vasovagal reflex. VVS: 1) may occur with upright posture (standing or seated or with exposure to emotional stress, pain, or medical settings; 2) typically is characterized by diaphoresis, warmth, nausea, and pallor; 3) is associated with vasodepressor hypotension and/or inappropriate bradycardia; and 4) is often followed by fatigue. Typical features may be absent in older patients.[24] VVS is often preceded by identifiable triggers and/or by a characteristic prodrome. The diagnosis is made primarily on the basis of a thorough history, physical examination, and eyewitness observation, if available.
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		

"Faint"



Initial Evaluation

Recommendations	Class[a]	Level[b]
Reflex syncope and OH		
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 significant OH.[18–24]	I	C
In the absence of the above criteria, reflex syncope and OH should be considered likely when the features that suggest reflex syncope or OH are present and the features that suggest cardiac syncope are absent (see *Table 5*).	IIa	C
Cardiac syncope		
Arrhythmic syncope is highly probable when the ECG shows[25–39]: • Persistent sinus bradycardia <40 b.p.m. or sinus pauses >3 s in awake state and in 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; or • Pacemaker or ICD malfunction with cardiac pauses.	I	C
Cardiac ischaemia-related syncope is confirmed when syncope presents with evidence of acute myocardial ischaemia with or without myocardial infarction.[25–39]	I	C
Syncope due to structural cardiopulmonary disorders is highly probable when syncope presents in patients with prolapsing atrial myxoma, left atrial ball thrombus, severe aortic stenosis, pulmonary embolus, or acute aortic dissection.	I	C
Additional advice and clinical perspectives The initial syncope evaluation, as described in this document, can define the cause of syncope in most patients. Strict adherence to the above definitions of VVS and situational reflex syncope, and of syncope due to OH, can be considered certain or highly likely irrespective of the presence of any other abnormal finding. In young subjects with unexplained syncope and no history of cardiac disease, no family history of sudden death, no supine syncope or syncope during sleep or exercise, no unusual triggers, and a normal ECG, the chance of cardiac syncope is very low. SCD rates in subjects <35 years amount to 1 – 3/100 000.		

HISTORY!

Cardiac vs Non-Cardiac Causes

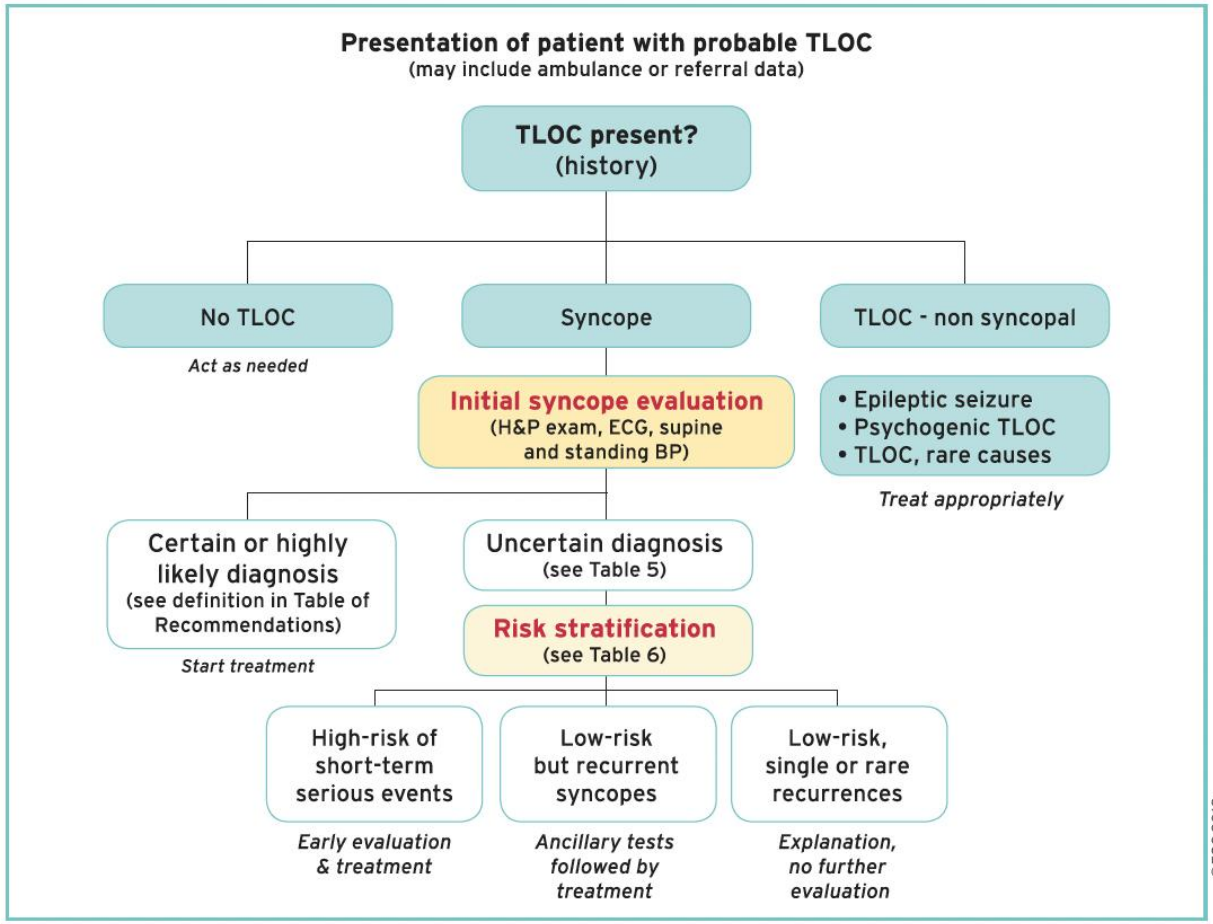
More Often Associated With Cardiac Causes of Syncope
Older age (>60 y)
Male sex
Presence of known ischemic heart disease, structural heart disease, previous arrhythmias, or reduced ventricular function
Brief prodrome, such as palpitations, or sudden loss of consciousness without prodrome
Syncope during exertion
Syncope in the supine position
Low number of syncope episodes (1 or 2)
Abnormal cardiac examination
Family history of inheritable conditions or premature SCD (<50 y of age)
Presence of known congenital heart disease
More Often Associated With Noncardiac Causes of Syncope
Younger age
No known cardiac disease
Syncope only in the standing position
Positional change from supine or sitting to standing
Presence of prodrome: nausea, vomiting, feeling warmth
Presence of specific triggers: dehydration, pain, distressful stimulus, medical environment
Situational triggers: cough, laugh, micturition, defecation, deglutition
Frequent recurrence and prolonged history of syncope with similar characteristics

SCD indicates sudden cardiac death.

HISTORY!

2.3.1. History and Physical Examination: Recommendation

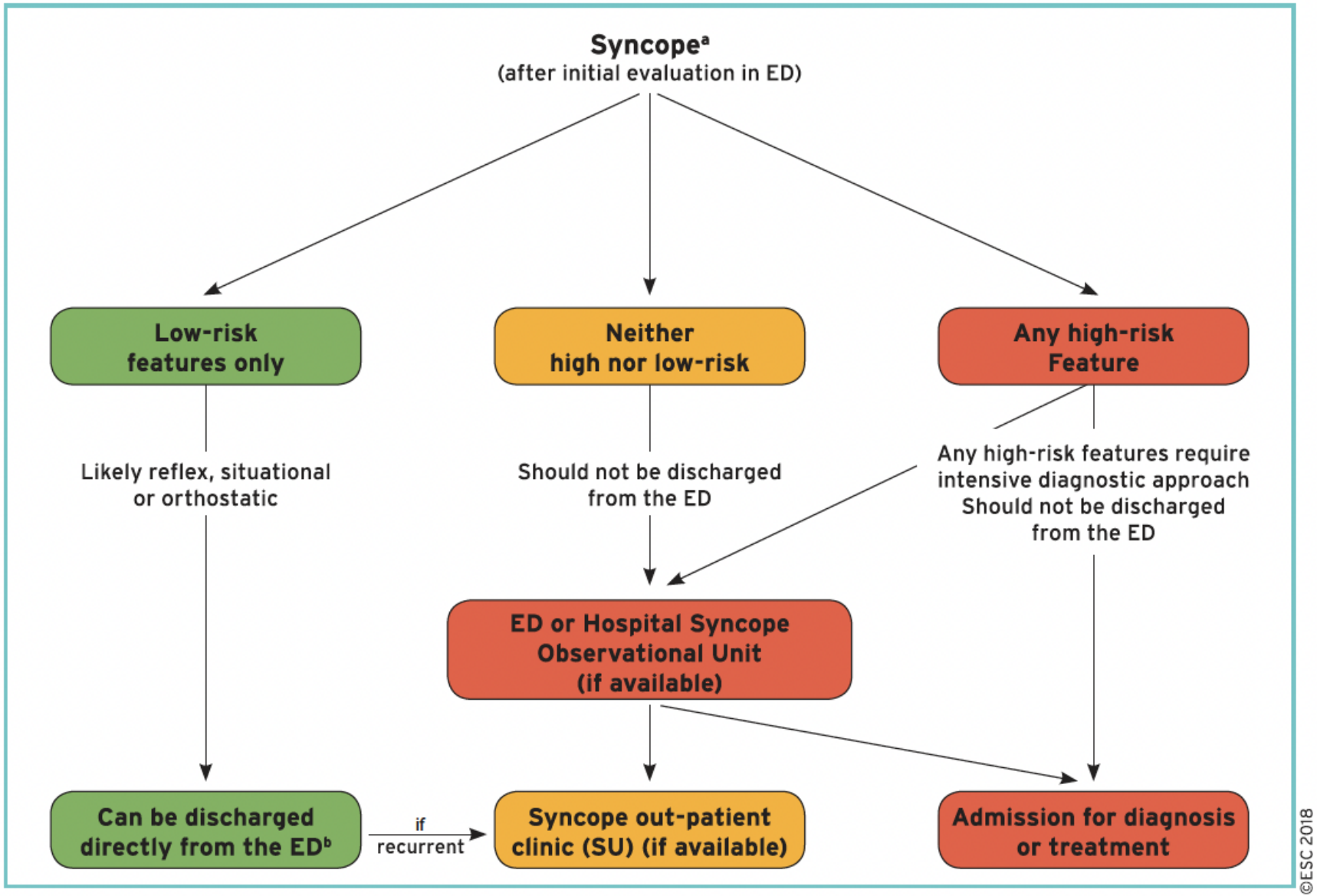
Recommendation for History and Physical Examination		
COR	**LOE**	**Recommendation**
I	B-NR	A detailed history and physical examination should be performed in patients with syncope.[58–66]



2.3.2. Electrocardiography: Recommendation

Recommendation for Electrocardiography		
COR	LOE	Recommendation
I	B-NR	In the initial evaluation of patients with syncope, a resting 12-lead electrocardiogram (ECG) is useful.[76]

Risk Stratification



Cardiac vs Non-Cardiac

Table 6 High-risk features (that suggest a serious condition) and low-risk features (that suggest a benign condition) i 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]
• 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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PHYSICAL EXAMINATION
High-risk
Major
• Unexplained systolic BP in the ED <90 mmHg[26,55]

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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Tas Health Referral Criteria

Emergency Referral Criteria

> If any of the following are present or suspected, please refer the patient to the Emergency Department (via ambulance if necessary) or follow local emergency care protocols or seek emergent medical advice if in a remote region. Clinical judgement should always be considered in addition to these criteria.

Criteria for Emergency include:

- Syncope with any of the following **concerning features:**
  - exertional onset
  - chest pain
  - persistent hypotension (systolic BP less than 90mmHg)
  - severe persistent headache
  - focal neurological deficits
  - preceded by or associated with palpitations
  - known ischaemic heart disease or reduced LV systolic function
  - associated with SVT or paroxysmal atrial fibrillation
  - pre-excited QRS (delta waves) on ECG
  - suspected malfunction of pacemaker or ICD
  - absence of prodrome
  - associated injury
  - occurs while supine or sitting
  - Seizures

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Statewide Referral Criteria (SRC)

Criteria for referral to public hospital specialist clinic services

Red flags are clinical indicators of possible serious underlying conditions requiring further medical intervention. They may or may not indicate an emergency.

Urgent (Category 1)

- New episode(s) of un-investigated syncope/near syncope **without** any of the listed Emergency Referral Criteria concerning features

Urgent referrals should be accompanied by a phone call to the Consultant/Registrar to organise urgent review.

Semi-urgent (Category 2)

- Recurrent syncope previously investigated with undetermined cause

Routine (Category 3)

- No category 3 criteria

Investigations

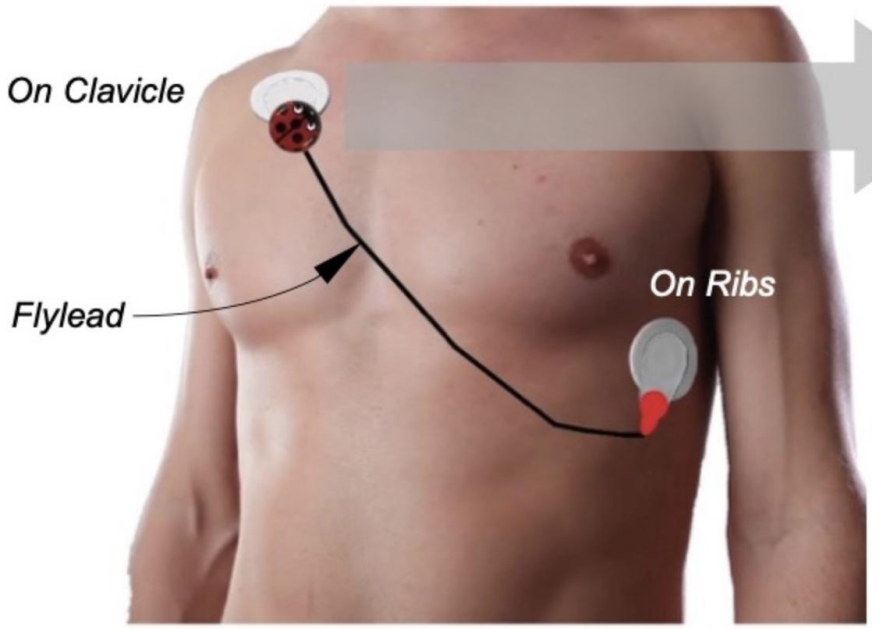
- ECG
- Postural BPs
- Ambulatory ECG monitoring **(dependent on history)**
- Echocardiogram

- …(Tilt Table)

Rhythm Monitors

Types of Monitor	Device Description	Patient Selection
Holter monitor[151–153]	A portable, battery-operated device Continuous recording for 24–72 h; up to 2 wk with newer models Symptom rhythm correlation can be achieved through a patient event diary and patient-activated annotations	Symptoms frequent enough to be detected within a short period (24–72 h) of monitoring*
Patient-activated, transtelephonic monitor (event monitor)[150,154,155]	A recording device that transmits patient-activated data (live or stored) via an analog phone line to a central remote monitoring station (eg, physician office)	Frequent, spontaneous symptoms likely to recur within 2–6 wk Limited use in patients with frank syncope associated with sudden incapacitation
External loop recorder (patient or auto triggered)†[150,154,155]	A device that continuously records and stores rhythm data over weeks to months Patient activated, or auto triggered (eg, to record asymptomatic arrhythmias) to provide a recording of events antecedent to (3–14 min), during, and after (1–4 min) the triggered event Newer models are equipped with a cellular phone, which transmits triggered data automatically over a wireless network to a remote monitoring system	Frequent, spontaneous symptoms related to syncope, likely to recur within 2–6 wk
External patch recorders[157–159]	Patch device that continuously records and stores rhythm data, with patient-trigger capability to allow for symptom-rhythm correlation No leads or wires, and adhesive to chest wall/sternum Various models record from 2–14 d Offers accurate means of assessing burden of atrial fibrillation Patient activated, or auto triggered (eg, to record asymptomatic arrhythmias) to provide a recording of events antecedent to, during, and after the triggered event	Can be considered as an alternative to external loop recorder Given that it is leadless, can be accurately self-applied, and is largely water resistant, it may be more comfortable and less cumbersome than an external loop recorder, potentially improving compliance Unlike Holter monitors and other external monitors, it offers only 1-lead recording
Mobile cardiac outpatient telemetry[160,161]	Device that records and transmits data (up to 30 d) from preprogrammed arrhythmias or patient activation to a communication hub at the patient's home Significant arrhythmias are detected; the monitor automatically transmits the patient's ECG data through a wireless network to the central monitoring station, which is attended by trained technicians 24 h/d This offers the potential for real-time, immediate feedback to a healthcare provider for evaluation	Spontaneous symptoms related to syncope and rhythm correlation In high-risk patients whose rhythm requires real-time monitoring
Implantable cardiac monitor[162,167,179–181]	Subcutaneously implanted device, with a battery life of 2–3 y Triggered by the patient (or often family member witness) to store the event Models allow for transtelephonic transmission, as well as automatic detection of significant arrhythmias with remote monitoring	Recurrent, infrequent, unexplained syncope (or suspected atypical reflex syncope) of suspected arrhythmic cause after a nondiagnostic initial workup, with or without structural heart disease

HeartBug™



- Up to 28 days recording
- Automated and patient triggered recordings
- Need for Smartphone

Electrocardiographic monitoring

Recommendations	Class[a]	Level[b]
Indications		
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
ILR should be considered in patients with suspected or certain reflex syncope presenting with frequent or severe syncopal episodes.[184–186]	IIa	B
ILR may be considered in patients in whom epilepsy was suspected but the treatment has proven ineffective.[137,189–191], *Supplementary Data Table 7*	IIb	B
ILR may be considered in patients with unexplained falls.[191–194], *Supplementary Data Table 8*	IIb	B
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

- Daily symptoms → Holter
- Weekly/Monthly symptoms → HeartBug™
- Very infrequent/high risk → ILR

ILRs

Battery – 3-4 years

Recommendation for implantable loop recorders

Recommendation	Class[a]	Level[b]
In patients with infrequent (less than once a month) unexplained syncope or other symptoms suspected to be caused by bradycardia, in whom a comprehensive evaluation did not demonstrate a cause, long-term ambulatory monitoring with an ILR is recommended.[108–112]	I	A

Echocardiogram

Recommendations	Class[a]	Level[b]
Indications		
Echocardiography is indicated for diagnosis and risk stratification in patients with suspected structural heart disease.[235,236]	I	B
Two-dimensional and Doppler echocardiography *during exercise* in the standing, sitting, or semi-supine position to detect provocable left ventricular outflow tract obstruction is indicated in patients with HCM, a history of syncope, and a resting or provoked peak instantaneous left ventricular outflow tract gradient <50 mmHg.[245–249]	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 electrocardiogram shows the typical features of these conditions.[237–244]	I	C
Additional advice and clinical perspectives • For patients without suspected cardiac disease after history taking, physical examination, and electrocardiography, the electrocardiogram does not provide additional useful information, suggesting that syncope alone is not an indication for echocardiography. • Computed tomography or MRI should be considered in selected patients presenting with syncope of suspected cardiac structural origin when echocardiography is not diagnostic.		

Tilt Testing

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

- Same information from active stand test

Recommendations for Tilt-Table Testing

COR	LOE	Recommendations
IIa	B-R	**If the diagnosis is unclear after initial evaluation, tilt-table testing can be useful for patients with suspected VVS.[208–213]**
See Online Data Supplement 15.		Tilt-table testing has been used to evaluate patients with syncope for nearly 3 decades.[208] It is an orthostatic stress test to assess the susceptibility of a vasovagal response to a postural change from a supine to an upright position. A positive response is defined as inducible presyncope or syncope associated with hypotension, with or without bradycardia (less commonly asystole). The hemodynamic response to the tilt maneuver determines whether there is a cardioinhibitory, vasodepressor, or mixed response.[214] There is general consensus that a tilt-table angle of 70 degrees for 30 to 40 minutes would provide optimal yield.[211,213,215] Adjunctive agents, such as a low dose of isoproterenol infusion or sublingual nitrates, may improve sensitivity but decrease specificity.[210,212,216,217] A positive tilt-table test suggests a tendency or predisposition to VVS induced in the laboratory. This observation during tilt-table testing cannot necessarily define a causal etiology or be entirely conclusive of a reflex mechanism for syncope in the clinical setting. Correlation of tilt-table–induced findings to patients' clinical presentation is critically important to prevent consequences of false-positive results from tilt-table testing. The utility of tilt-table testing is highest in patients with a suspected VVS when syncope is recurrent. Several factors have reduced the role of tilt-table testing in the evaluation of syncope: the overall moderate sensitivity, specificity, and reproducibility of tilt-table testing; the presence of false-positive response in controls; the increasing recognition of VVS from a structured history taking; and the availability of long-term cardiac monitoring.[24,211,213]
IIa	B-NR	**Tilt-table testing can be useful for patients with syncope and suspected delayed OH when initial evaluation is not diagnostic.[218,219]**
See Online Data Supplement 15.		OH with standing, or a similar fall in blood pressure within 3 minutes of upright tilt-table testing to 60 degrees,[220] is distinct from delayed OH, characterized by a sustained decrease in blood pressure occurring beyond 3 minutes of standing or upright tilt-table testing.[220,221] Delayed OH may be responsible for syncopal episodes or symptoms of orthostatic intolerance only after prolonged standing. In 1 retrospective study of 230 patients with OH, only 46% had OH within 3 minutes of head-up tilt; 15% had OH between 3 and 10 minutes; and 39% had OH only after 10 minutes of tilt-table testing.[218] In 10-year follow-up data from 165 of these patients, 54% of individuals with delayed OH progressed to classic OH.[219] The 10-year death rate in individuals with delayed OH was 29%, compared with 64% and 9% in individuals with baseline OH and controls, respectively.

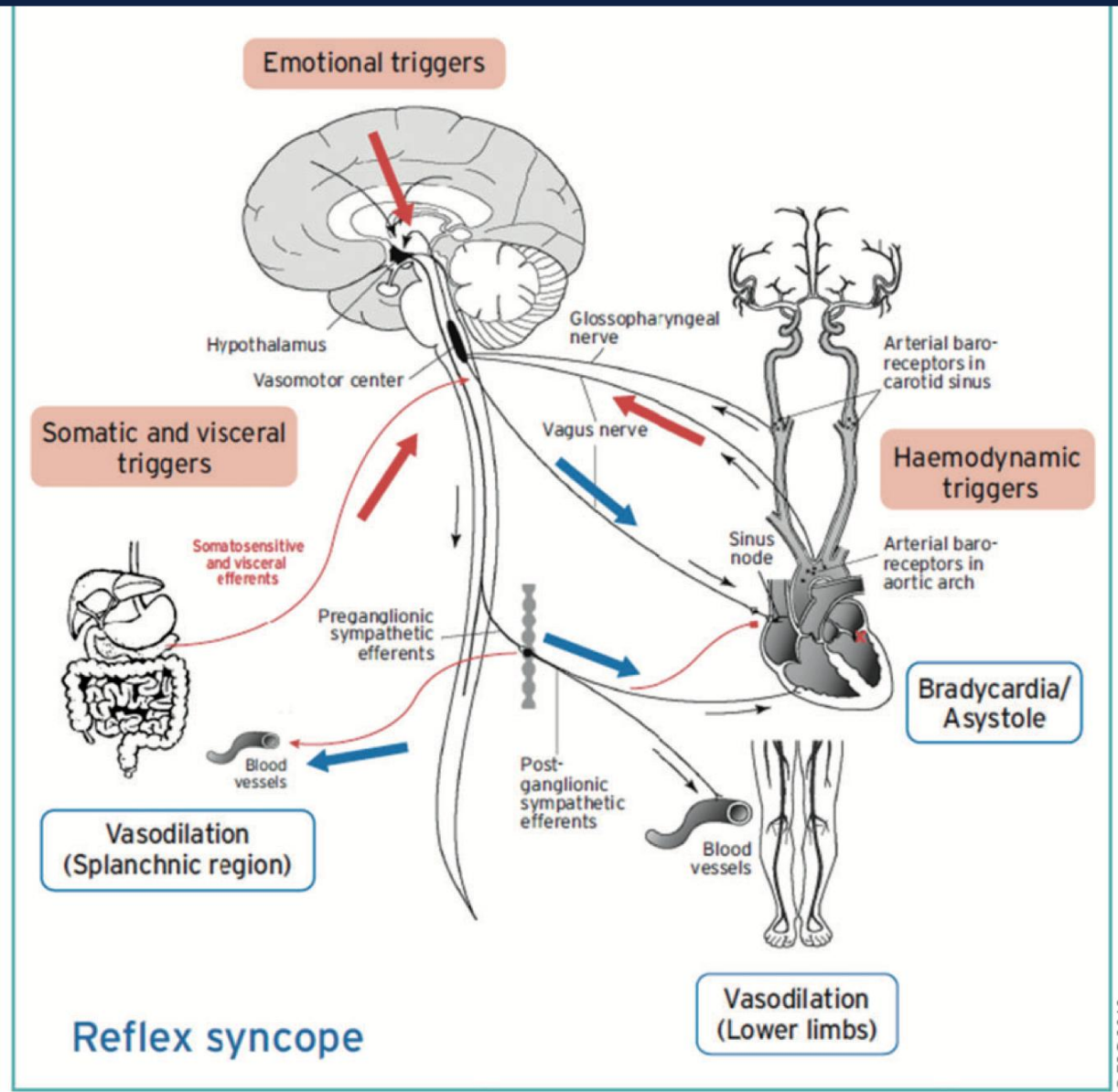
EP Study

Recommendations	Class[a]	Level[b]
Indications		
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
In patients with syncope and asymptomatic sinus bradycardia, EPS may be considered in a few instances when non-invasive tests (e.g. ECG monitoring) have failed to show a correlation between syncope and bradycardia.[210–212]	IIb	B
In patients with syncope preceded by sudden and brief palpitations, EPS may be considered when syncope remains unexplained after non-invasive evaluation.	IIb	C

ETT

Recommendations	Class[a]	Level[b]
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.		

Reflex Syncope



Vasodepressor, cardioinhibitory or mixed reflex syncope

Management of Reflex Syncope

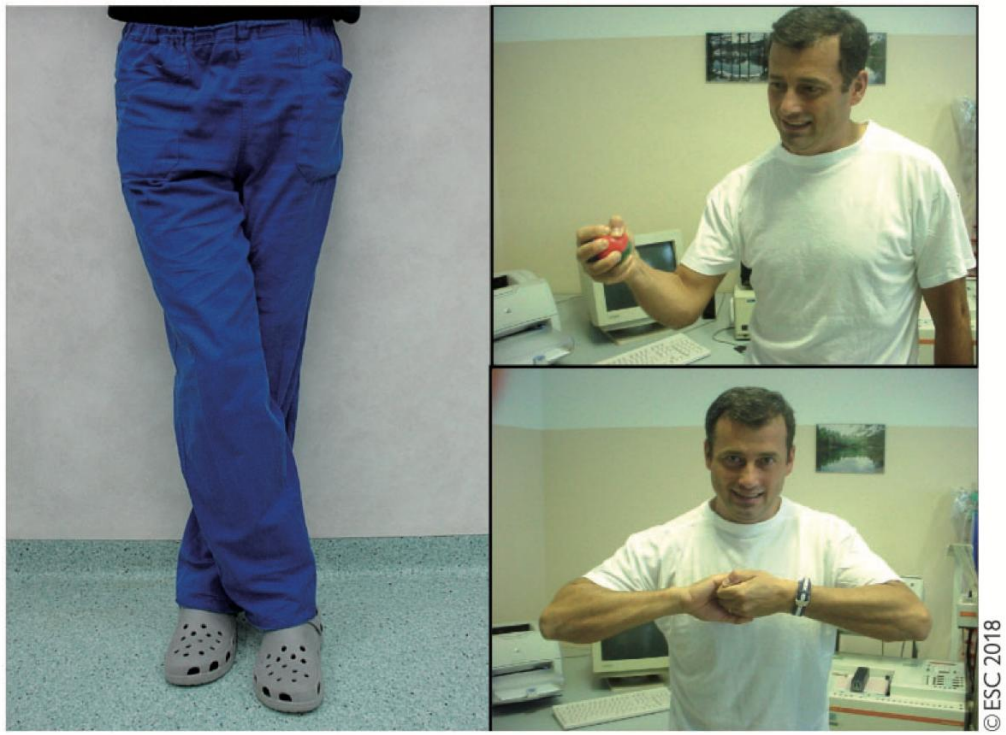
- Reassurance
- Education and lifestyle measures
  - Awareness and avoidance of triggers/situations
  - Early recognition of symptoms → sit/lie down
  - Counter-pressure manoeuvres
  - Oral fluid supplementation
  - Salt supplementation to about 7-10g/day, approx. 1-2 teaspoons)

Counter-Pressure Manoeuvres

- Use at onset of symptoms
- Increase blood pressure rapidly and significantly

Leg crossing with muscle tensing

Calf Pump Exercises



Hand Gripping

Arm Tensing

Web Figure 35 Most common counter-pressure manoeuvres: leg crossing, hand gripping, and arm tensing.

Management of Reflex Syncope

- Pharmacological (mainly for orthostatic)
  - Fludrocortisone
    - Increases renal sodium reabsorption and expands plasma volume
    - Moderate effectiveness
    - Not in HF/hypertension
  - Midodrine
    - Alpha agonist causing vasoconstriction
    - Frequent dosing (TDS)
    - Side effects of supine hypertension, urinary problems
    - Conflicting evidence of efficacy
  - SSRIs (paroxetine, sertraline)
    - ?regulate neural control of BP during vasovagal response (decreased sympathetic withdrawal)

ESC European Society of Cardiology

Europace (2022) **24**, 1171–1178
https://doi.org/10.1093/europace/euab323

CLINICAL RESEARCH
Syncope

Midodrine for the prevention of vasovagal syncope: a systematic review and meta-analysis

Lucy Y. Lei , Satish R. Raj †, and Robert S. Sheldon *†

Department of Cardiac Sciences, Libin Cardiovascular Institute, Cumming School of Medicine, University of Calgary, GAA02 HRIC Building, 3280 Hospital Drive NW, Calgary, AB T2N 4Z6, Canada

- Systematic review and meta-analysis
- 7 studies included (315 patients)
- Significantly reduced positive head up tilt test (RR 0.37)
- Significantly reduced clinical syncope, although more modest (RR 0.51) and in 2 double blind placebo controlled RCTs, RR only 0.71

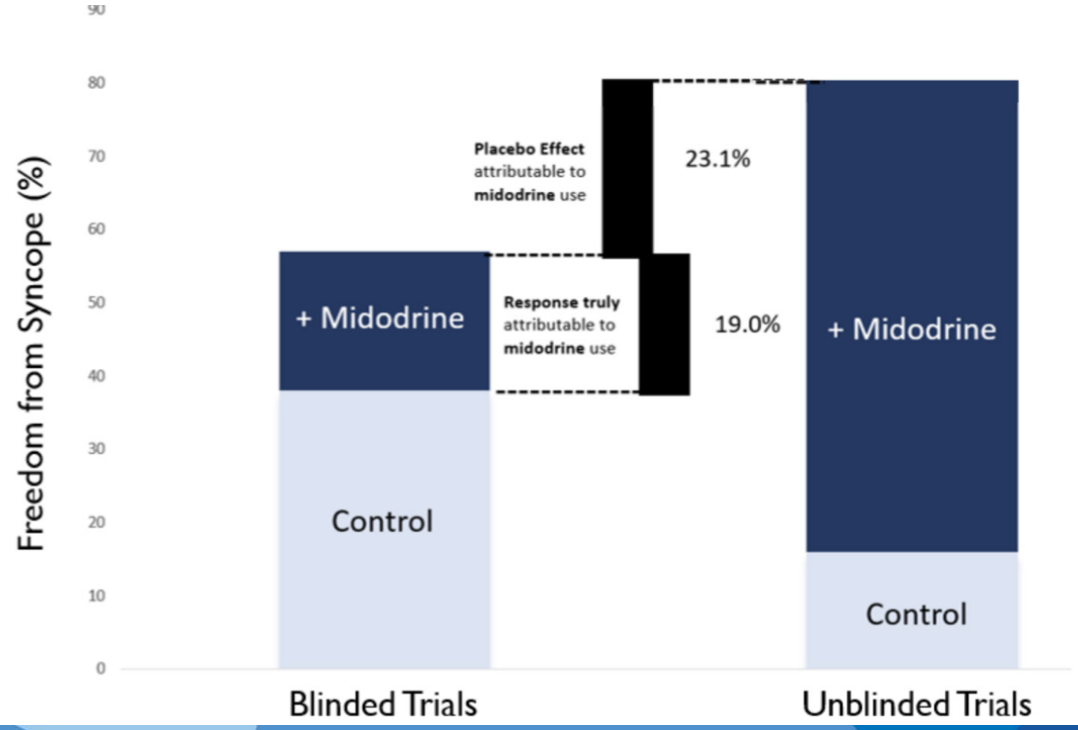
Open access Meta-analysis

openheart

Therapeutic options for neurocardiogenic syncope: a meta-analysis of randomised trials with and without blinding

Nandita Kaza,[1] Michela Sorbini ,[1] Zhuang Liu,[1] Monika Johal,[1] Bradley Porter,[2] Alexandra Nowbar,[1] Shuli Levy,[2] Melanie Dani,[2] Patricia Taraborelli,[2] Philip Eardley,[2] Mohamed Zuhair,[2] Ahran Arnold,[1] James Howard,[1] Zachary I Whinnett,[1] Darrel P Francis,[1] Matthew J Shun-Shin,[1] Phang Boon Lim,[1] Daniel Keene[1]

- 47 eligible trials
- 3518 patients
- Unblinded trials showed consistently larger benefits than blinded trials
- With blinded conditions, only SSRIs, Midodrine and CLS pacing significantly reduced syncope recurrence



- Pacing
  - For cardioinhibitory

Recommendation for Pacemakers in VVS		
COR	LOE	Recommendation
IIb	B-R[SR]	**Dual-chamber pacing might be reasonable in a select population of patients 40 years of age or older with recurrent VVS and prolonged spontaneous pauses.[404-408,410]**
See Online Data Supplements 27 and 28.		Among patients with a positive tilt-table test, a benefit of pacing for treatment of recurrent syncope was evident as compared with medical or no therapy in open-label trials,[52,404,406,410-412] but this result must be interpreted with caution because of the possibility of outcome ascertainment bias. In 2 RCTs, there was no statistically significant benefit seen with active pacing.[407,408] However, in a select population of patients >40 years of age with recurrent syncope and documented spontaneous pauses ≥3 seconds correlated with syncope or an asymptomatic pause ≥6 seconds, dual-chamber pacing reduced syncope recurrence. There was less benefit in patients with a positive tilt-table test that induced a vasodepressor response.[405]

  - Biotronik CLS (Closed Loop Stimulation)
    - Rate-adaptive pacing algorithm
    - Measures RV myocardial impedance during systole
    - During mental stress (or physical activity), the autonomic nervous system triggers increased contractility. CLS detects this and increases HR to match
    - BioSync CLS study – syncope rate reduced by 77%

- Cardioneural Ablation
  - Radiofrequency ablation of ganglionated plexi (GP) located in the epicardial fat around the right and left atria
  - Diminishes vagal tone because parasympathetic fibres predominate in GP

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ORIGINAL RESEARCH

NEUROMODULATION

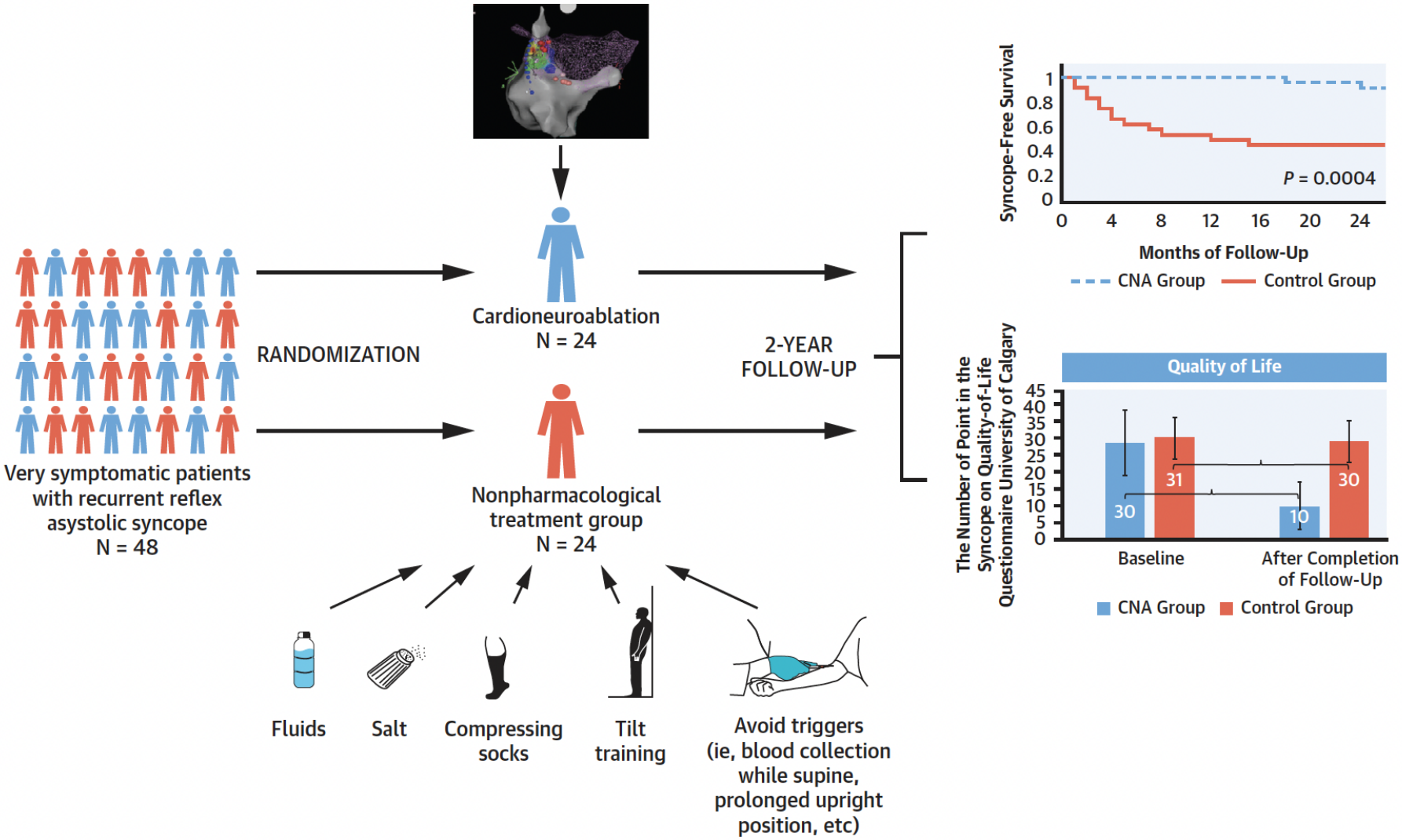
Cardioneuroablation for Reflex Syncope

Efficacy and Effects on Autonomic Cardiac Regulation—A Prospective Randomized Trial

Roman Piotrowski, MD, PhD, Jakub Baran, MD, PhD, Agnieszka Sikorska, MD, PhD, Tomasz Krynski, MD, Piotr Kulakowski, MD, PhD

- 1st randomized study of CNA
- Prospective, open, randomized, controlled, investigator-initiated trial comparing CAN vs optimal non-pharmacologic therapy in patients with cardioinhibitory VVS

CENTRAL ILLUSTRATION **The First Randomized Study Documenting Efficacy of Cardioneuroablation in Patients With Cardioinhibitory Vasovagal Syncope**



Piotrowski R, et al. J Am Coll Cardiol EP. 2023;9(1):85-95.

CNA = cardioneuroablation.

Management of Reflex Syncope - Summary

Recommendations	Class[a]	Level[b]
Education and lifestyle modifications		
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. *Supplementary Data Table 10*	I	B
Discontinuation/reduction of hypotensive therapy		
Modification or discontinuation of hypotensive drug regimen should be considered in patients with vasodepressor syncope, if possible.[260–262]	IIa	B
Physical manoeuvres		
Isometric PCM should be considered in patients with prodromes who are <60 years of age.[119–121,263,264]	IIa	B
Tilt training may be considered for the education of young patients.[265–272]	IIb	B
Pharmacological therapy		
Fludrocortisone may be considered in young patients with the orthostatic form of VVS, low–normal values of arterial BP, and the absence of contraindication to the drug.[275]	IIb	B
Midodrine may be considered in patients with the orthostatic form of VVS.[278]	IIb	B
Beta-adrenergic blocking drugs are not indicated.[279,280]	III	A
Cardiac pacing		
Cardiac pacing should be considered to reduce syncopal recurrences in patients aged >40 years, with spontaneous documented symptomatic asystolic pause(s) >3 s or asymptomatic pause(s) >6 s due to sinus arrest, AV block, or the combination of the two.[184,185,200,292]	IIa	B
Cardiac pacing should be considered to reduce syncope recurrence in patients with cardioinhibitory carotid sinus syndrome who are >40 years with recurrent frequent unpredictable syncope.[90,292,293]	IIa	B
Cardiac pacing may be considered to reduce syncope recurrences in patients with tilt-induced asystolic response who are >40 years with recurrent frequent unpredictable syncope.[292,297,298,303]	IIb	B
Cardiac pacing may be considered to reduce syncope recurrences in patients with the clinical features of adenosine-sensitive syncope.[5,227,286]	IIb	B
Cardiac pacing is not indicated in the absence of a documented cardioinhibitory reflex.[299,300]	III	B

Class IIa in AHA guidelines

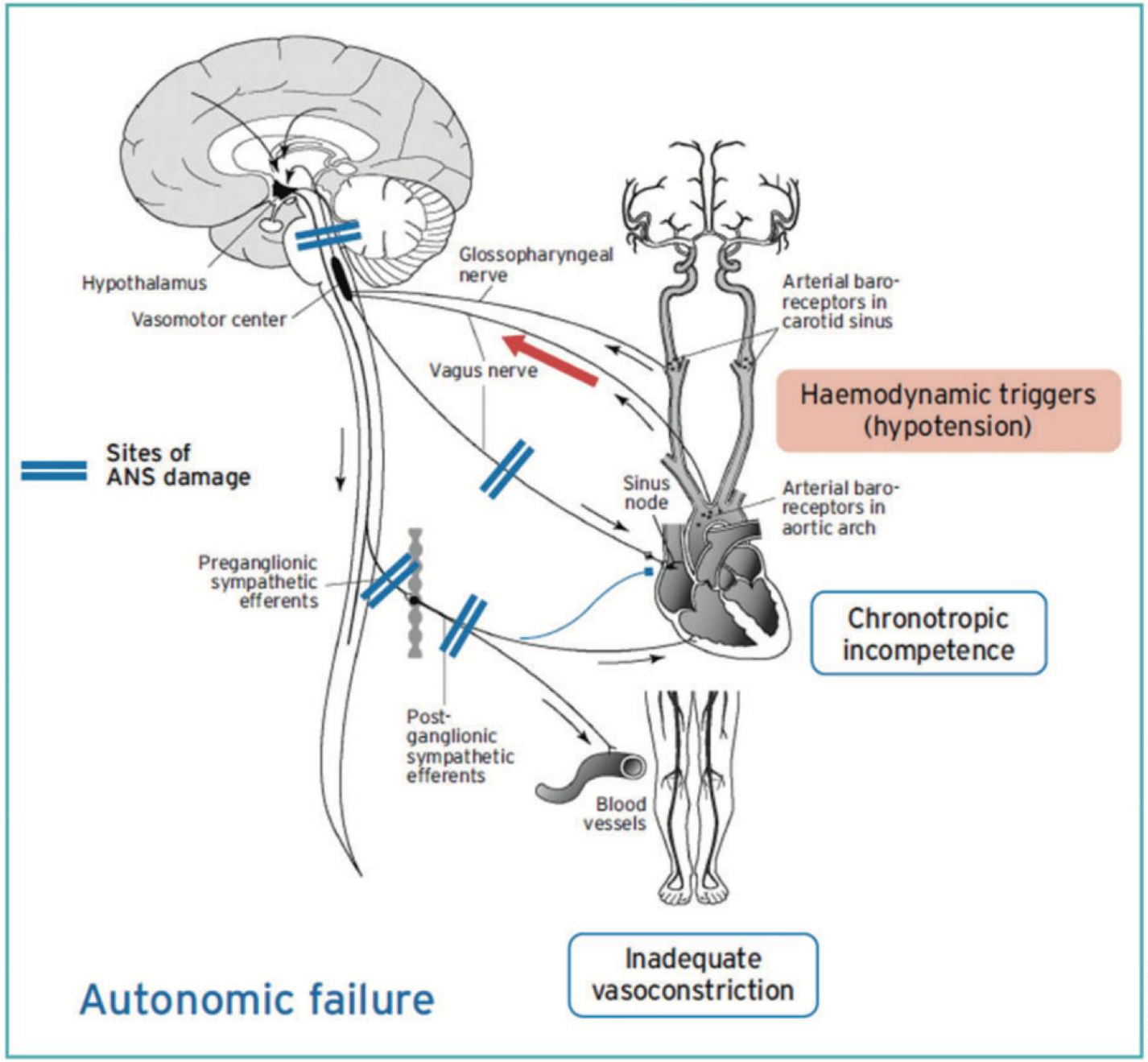
POTS

- Part of spectrum of autonomic dysfunction
- Increase in HR >30bpm or to >120bpm within 10 minutes of standing **without** a drop in blood pressure
- Symptoms of orthostatic intolerance
- Active stand test
  - Lie flat for 5 minutes for baseline
  - Stand smoothly
  - HR and BP on standing and every minute for 10 minutes
- Treatment similar to VVS plus
  - Exercise plans
  - Small regular meals
  - Beta blockers/Ivabradine

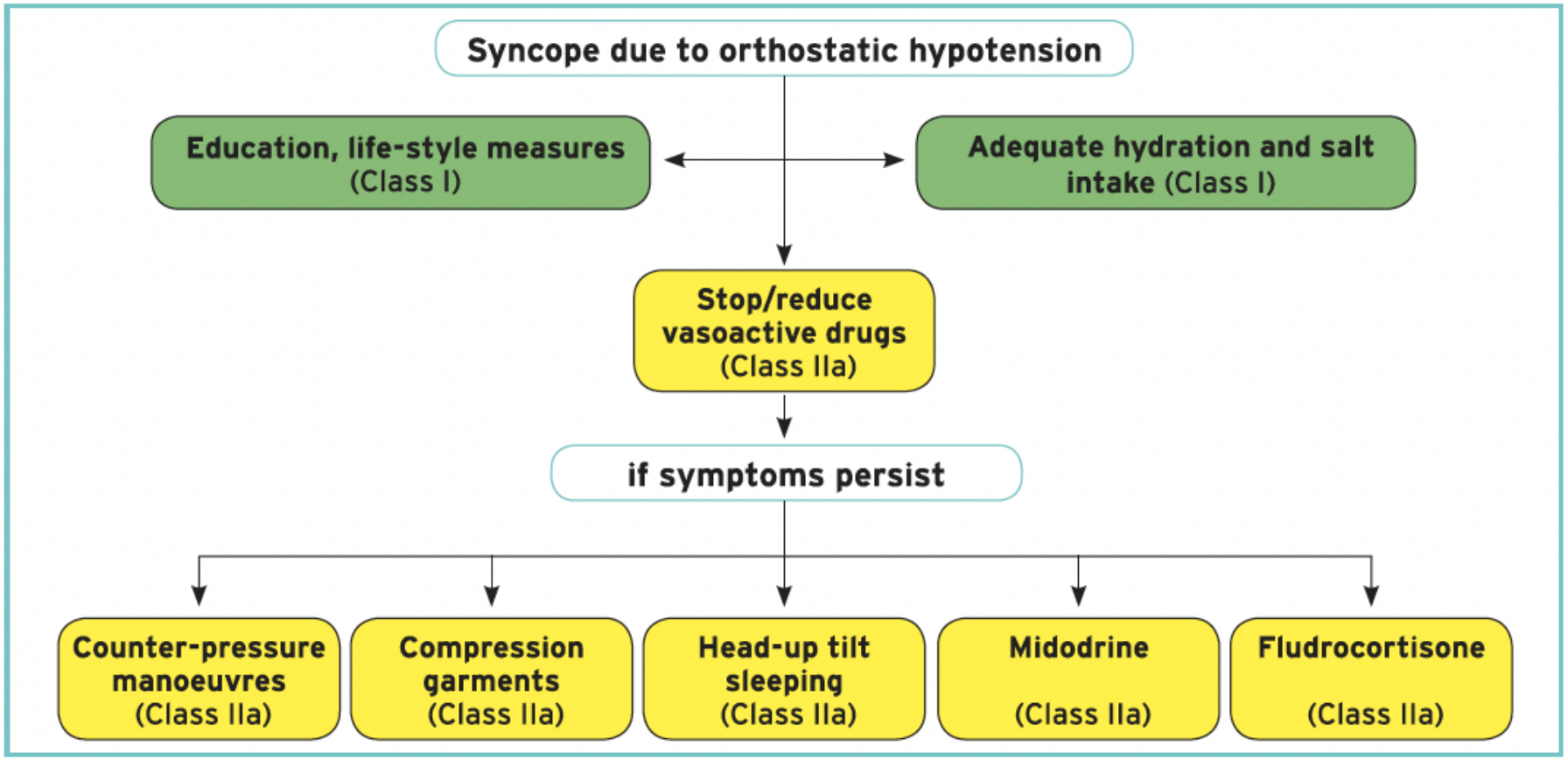
Orthostatic hypotension

Active standing

Recommendations	Class[a]	Level[b]
Indications		
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
Continuous beat-to-beat non-invasive BP and HR measurement may be preferred when short-lived BP variations are suspected, such as in initial OH.[20,103,104]	IIb	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
Syncope due to OH should be considered likely when there is an asymptomatic fall in systolic BP from baseline value ≥20 mmHg or diastolic BP ≥10 mmHg, or a decrease in systolic BP to <90 mmHg, and symptoms (from history) are consistent with OH.[6,20,103,104]	IIa	C
Syncope due to OH should be considered likely when there is a symptomatic fall in systolic BP from baseline value ≥20 mmHg or diastolic BP ≥10 mmHg, or a decrease in systolic BP to <90 mmHg, and not all of the features (from history) are suggestive of OH.[6,20,103,104]	IIa	C
POTS should be considered likely when there is an orthostatic HR increase (>30 b.p.m. or to >120 b.p.m. within 10 min of active standing) in the absence of OH that reproduces spontaneous symptoms.[6,20,103,104]	IIa	C
Syncope due to OH may be considered possible when there is an asymptomatic fall in systolic BP from baseline value ≥20 mmHg or diastolic BP ≥10 mmHg, or a decrease in systolic BP to <90 mmHg, and symptoms (from history) are less consistent with OH.[6,20,103,104]	IIb	C


Hypothalamus
Vasomotor center
Glossopharyngeal nerve
Vagus nerve
Arterial baro-receptors in carotid sinus
Haemodynamic triggers (hypotension)
Sites of ANS damage
Sinus node
Arterial baro-receptors in aortic arch
Preganglionic sympathetic efferents
Chronotropic incompetence
Post-ganglionic sympathetic efferents
Blood vessels
Inadequate vasoconstriction
Autonomic failure
© ESC 2018

Management of Orthostatic Hypotension

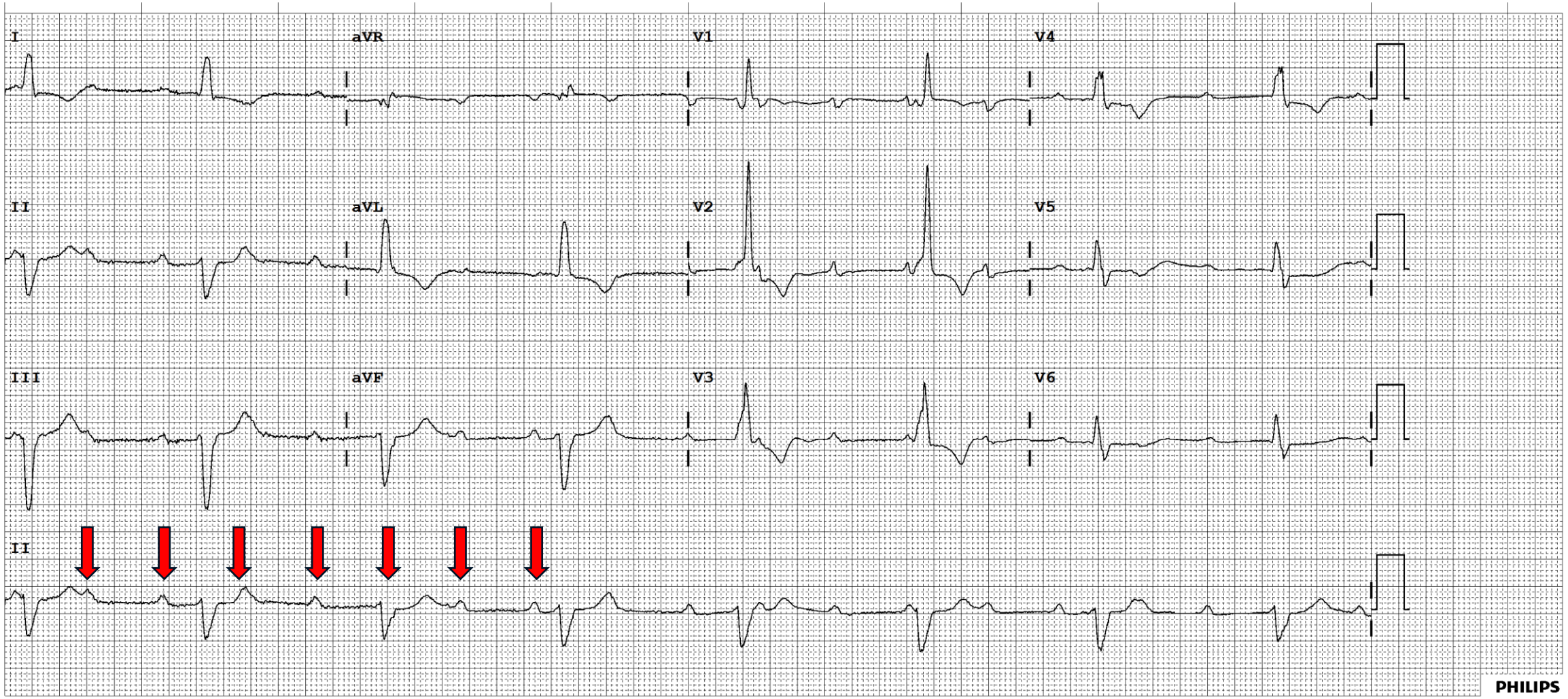


Cardiogenic syncope

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

HR	52 bpm	ST-I	-0.6 mm	ST-V1	0.0 mm
PVC	17 /min	ST-II	-0.2 mm	ST-V2	-0.9 mm
		ST-III	0.6 mm	ST-V3	-1.1 mm
		ST-aVR	0.5 mm	ST-V4	-0.8 mm
QT	456 msec	ST-aVL	-0.5 mm	ST-V5	-0.8 mm
QTc	562 msec	ST-aVF	0.1 mm	ST-V6	-0.5 mm

12 Lead ECG Report (Standard)



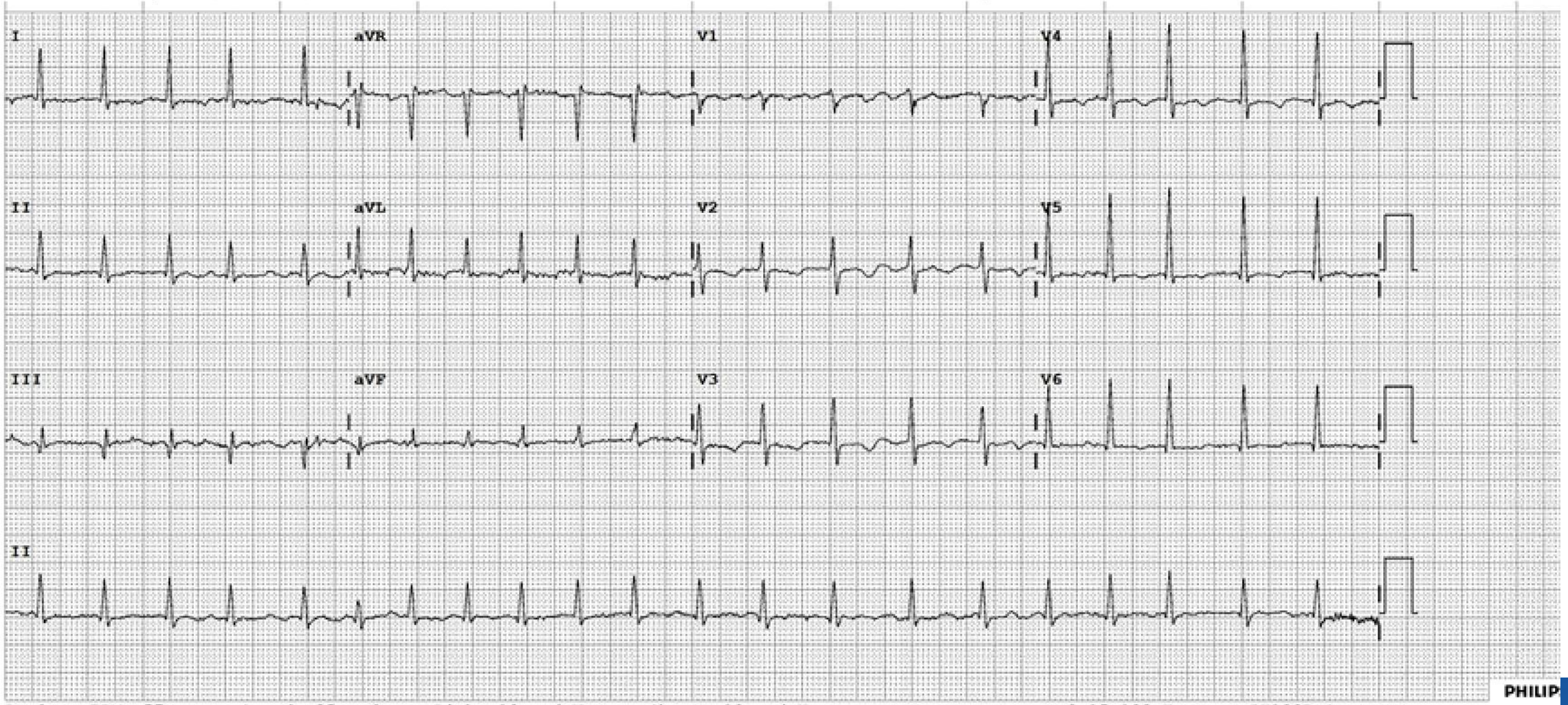
Device: EDMon56 Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV 0.15-100 Hz

HR 128 . Atrial fibrillation.....? atrial activity Room: R4-ED
RR 468 . Ventricular premature complex.....V complex w/ short R-R interval
PR . Borderline intraventricular conduction delay.....QRSd >112mS
QRSD 113 . Borderline repolarization abnormality.....ST dep & abnormal T
QT 359 . Prolonged QT interval.....QTc >500mS
QTc 524

--AXIS--
P
QRS 12
T 145

- ABNORMAL ECG -

12 Lead ECG Report (Standard) Unconfirmed Diagnosis



PHILIP

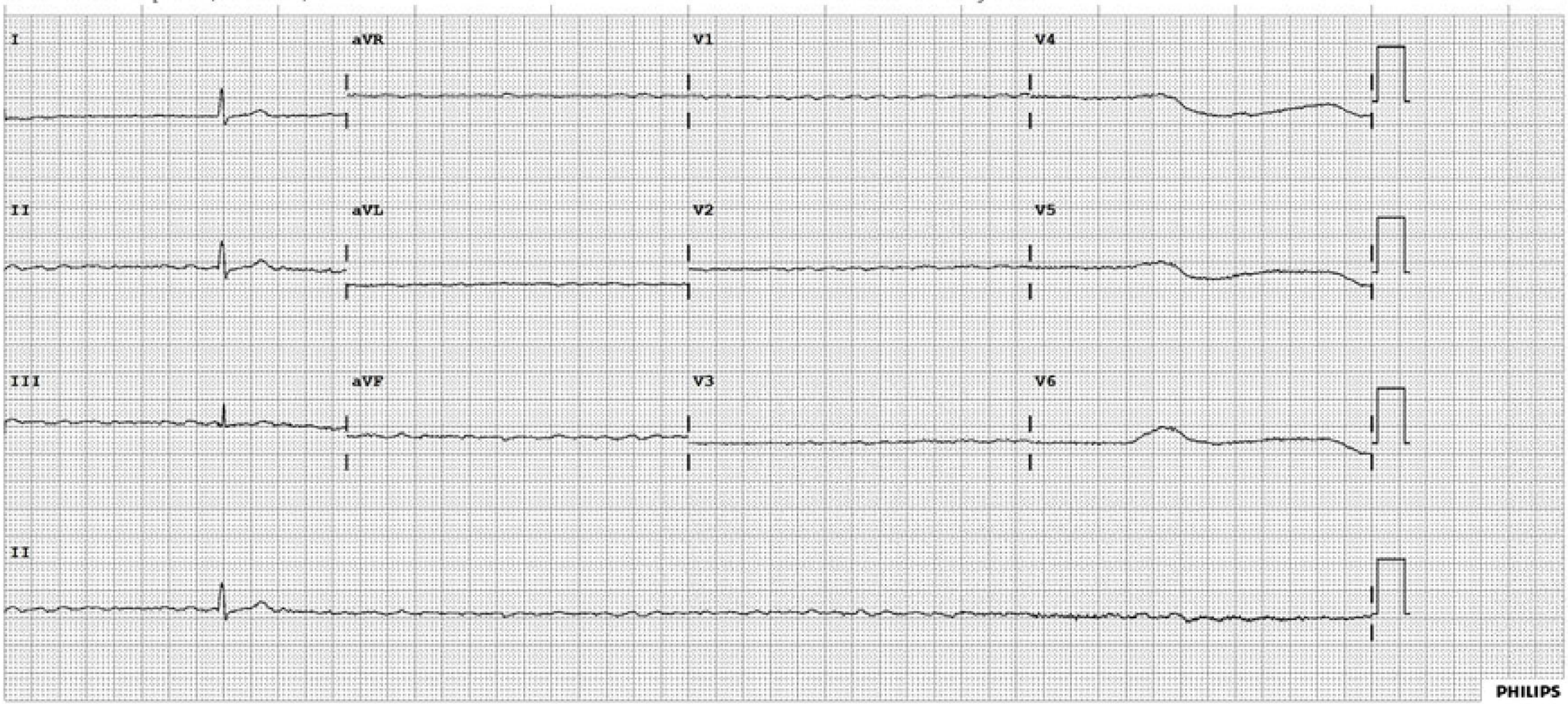
Device: EDMon57 Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV 0.15-100 Hz PH100B C

HR . Uncertain rhythm: review.....rhythm measurements incomplete Room: R4-ED
RR . No further analysis attempted - not enough leads could be measured
PR
QRSD
QT
QTc

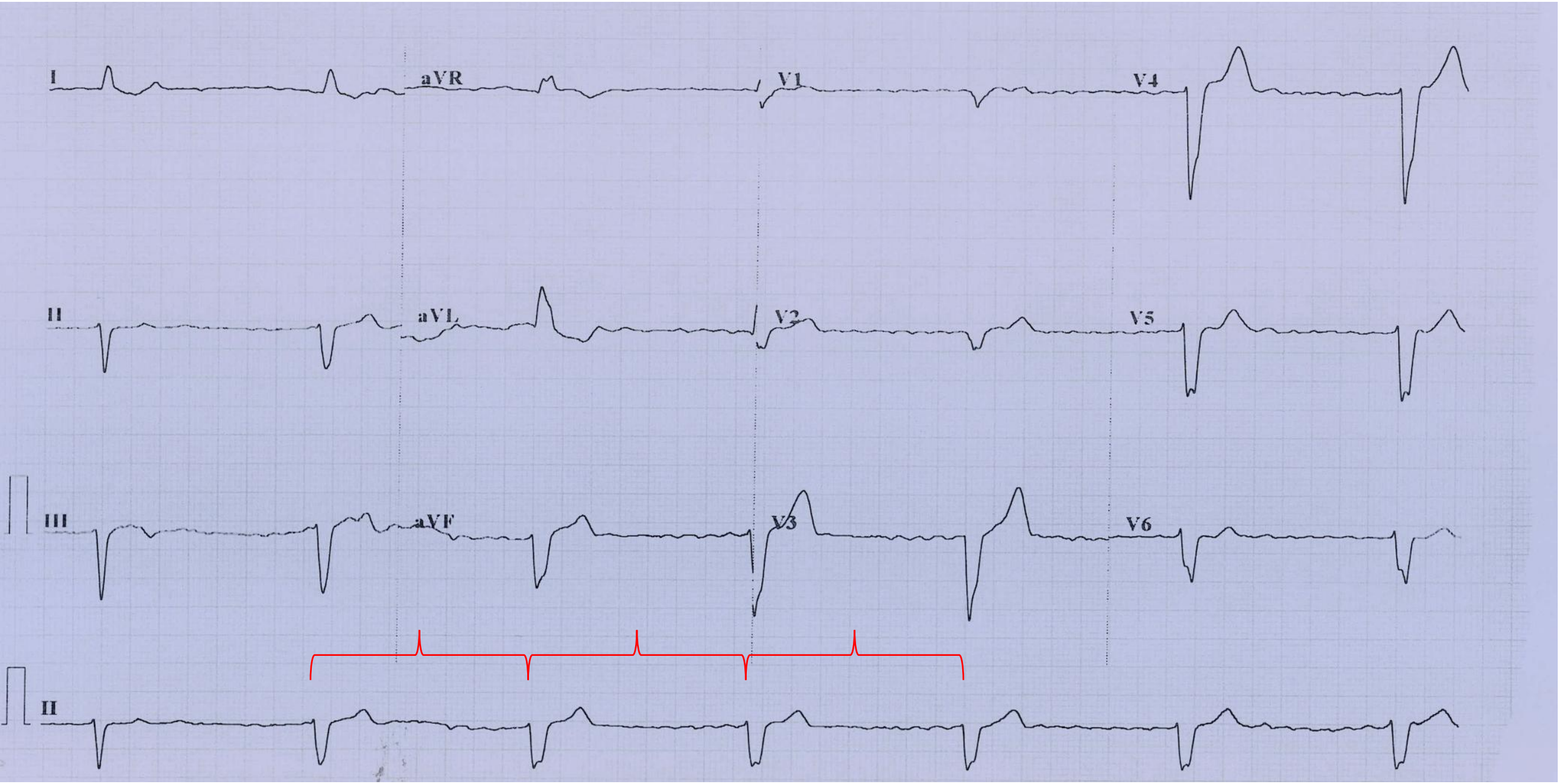
--AXIS--
P 0
QRS 0
T

- DEFECTIVE ECG -

12 Lead ECG Report (Standard) Unconfirmed Diagnosis



Device: EDMon57 Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV 0.15-100 Hz PH100B C

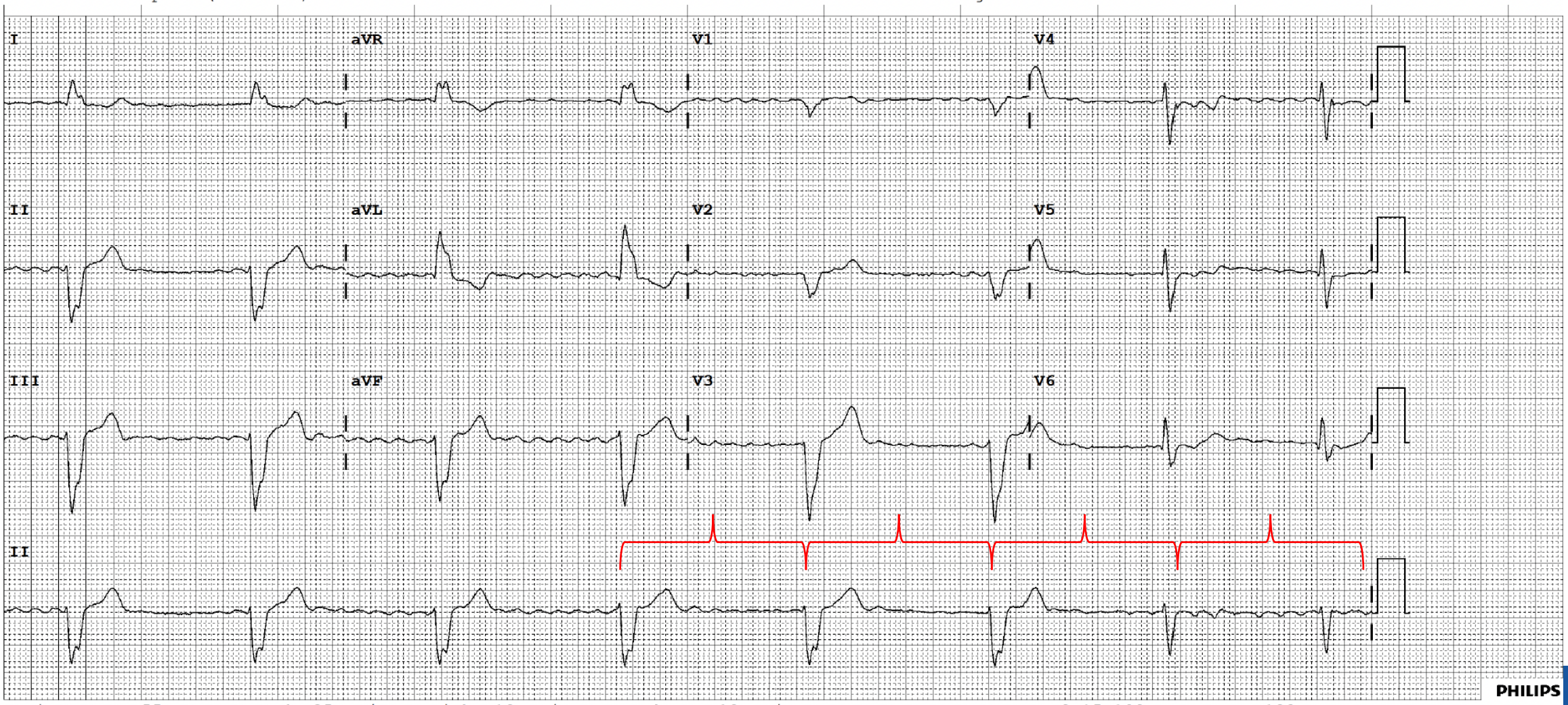

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

HR	44	. Atrial fibrillation.....V-rate 44- 45, irreg A-activity	Room: R2-ED
RR	1364	. Nonspecific IVCD with LAD.....QRSd >120mS & LAD	
PR		. LVH with secondary repolarization abnormality.....multi-LVH criteria, abnrm ST-T	
QRSD	156	. Anterior infarct, old.....Q >40mS, abnormal ST-T, V2-V5	
QT	488		
QTc	418		

--AXIS--
P
QRS -77
T 86

- ABNORMAL ECG -

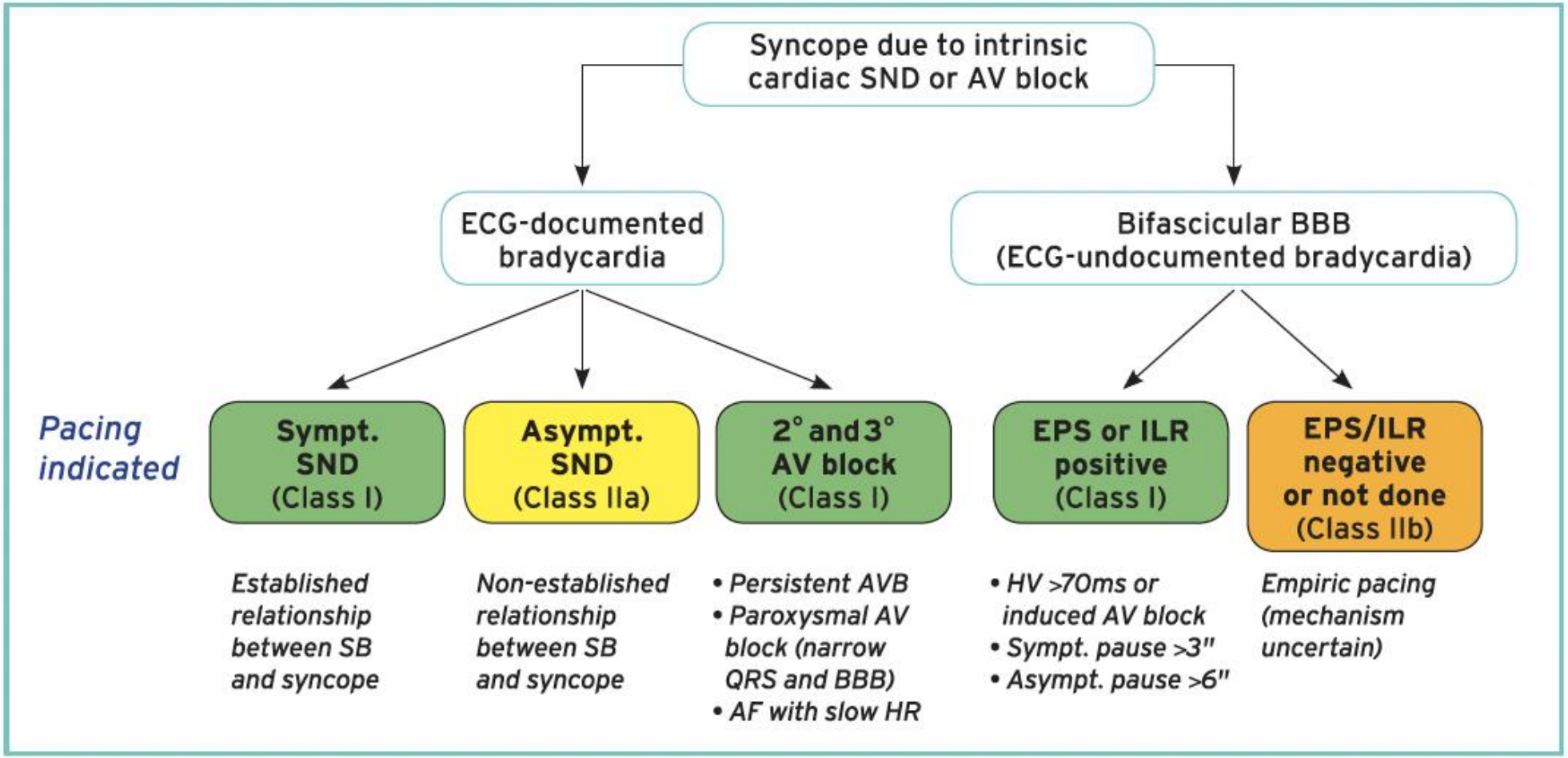
12 Lead ECG Report (Standard) Unconfirmed Diagnosis



Device: EDMon55 Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV 0.15-100 Hz PH100B C

PHILIPS

Management of Cardiac Syncope



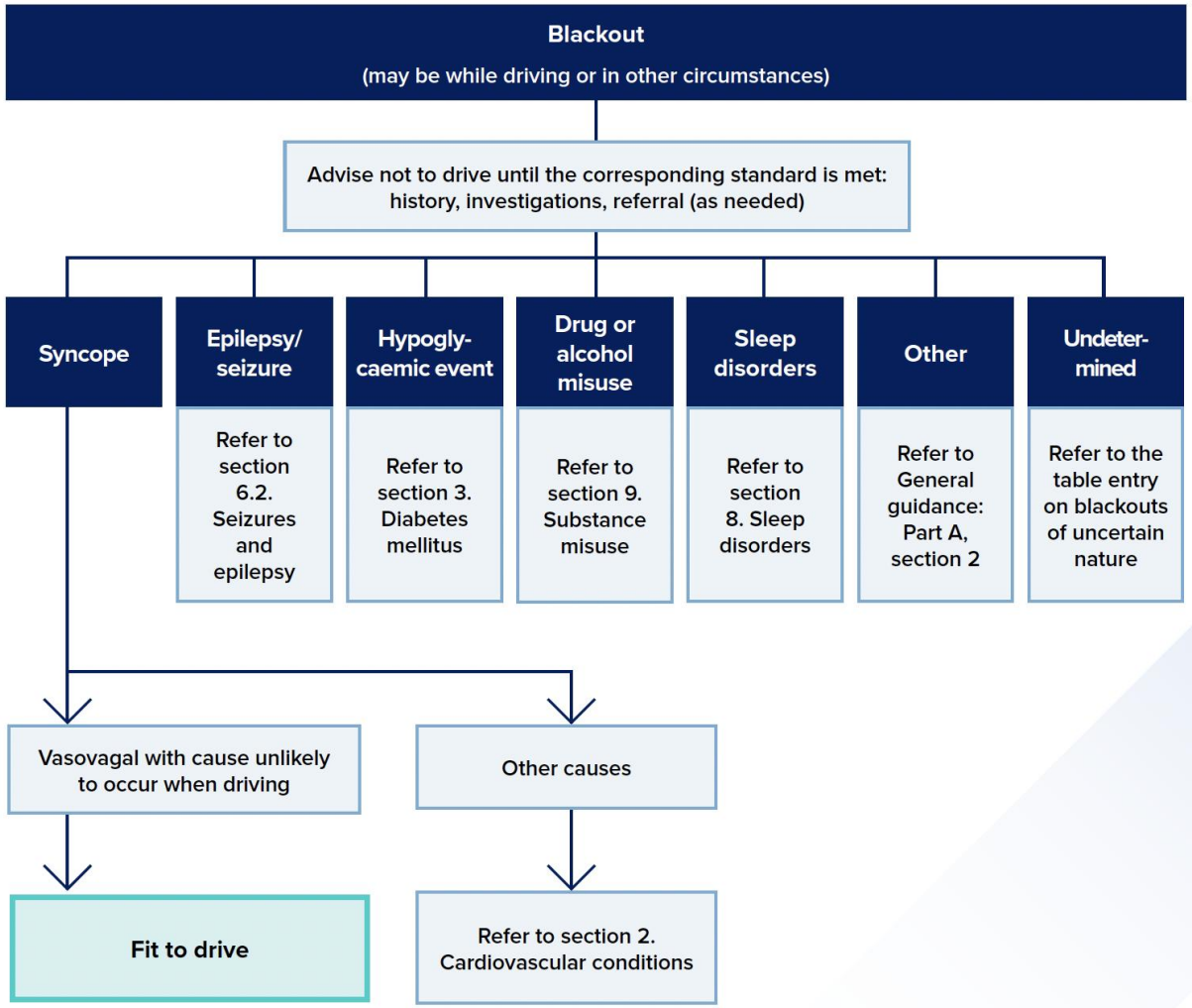
Dual chamber cardiac pacing is indicated to reduce recurrent syncope in patients aged >40 years with severe, unpredictable, recurrent syncope who have: ● spontaneous documented symptomatic asystolic pause/s >3 s or asymptomatic pause/s >6 s due to sinus arrest or AVB; or ● cardioinhibitory carotid sinus syndrome; or ● asystolic syncope during tilt testing.	I	A

Treatment of syncope due to cardiac arrhythmias

Recommendations	Class[a]	Level[b]
Bradycardia (intrinsic)		
Cardiac pacing is indicated when there is an established relationship between syncope and symptomatic bradycardia due to:		
• Sick sinus syndrome.[210–212,334–338]	I	B
• Intrinsic AV block.[200,255,341]	I	B
Cardiac pacing is indicated in patients with intermittent/paroxysmal intrinsic third- or second-degree AV block (including AF with slow ventricular conduction), although there is no documentation of a correlation between symptoms and ECGs.	I	C
Cardiac pacing should be considered when the relationship between syncope and asymptomatic sinus node dysfunction is less established.[135,136,210–212,339,340]	IIa	C
Cardiac pacing is not indicated in patients when there are reversible causes for bradycardia.	III	C
Bifascicular BBB		
Cardiac pacing is indicated in patients with syncope, BBB, and a positive EPS or ILR-documented AV block.[188,217]	I	B
Cardiac pacing may be considered in patients with unexplained syncope and bifascicular BBB.[217,255,344]	IIb	B
Tachycardia		
Catheter ablation is indicated in patients with syncope due to SVT or VT in order to prevent syncope recurrence.[46]	I	B
An ICD is indicated in patients with syncope due to VT and an ejection fraction ≤35%.[46]	I	A
An ICD is indicated in patients with syncope and previous myocardial infarction who have VT induced during EPS.[218]	I	C
An ICD should be considered in patients with an ejection fraction >35% with recurrent syncope due to VT when catheter ablation and pharmacological therapy have failed or could not be performed.[16]	IIa	C
Antiarrhythmic drug therapy, including rate-control drugs, should be considered in patients with syncope due to SVT or VT.	IIa	C

Driving Guidelines

Figure 6. Management of blackouts and driving



AusRoads Medical Standards, 2022

Medical standards for licensing – blackouts of uncertain nature

Health professionals should familiarise themselves with the information in this chapter and the tabulated standards before assessing a person's fitness to drive.

Condition	Private standards (Drivers of cars, light rigid vehicles or motorcycles unless carrying public passengers or requiring a dangerous goods driver licence – refer to definition in Table 3)	Commercial standards (Drivers of heavy vehicles, public passenger vehicles or requiring a dangerous goods driver licence – refer to definition in Table 3)
Blackouts – episode(s) or impaired consciousness – of uncertain nature	**A person should not drive for 6 months following a single blackout of undetermined nature.** **A person should not drive for 12 months following two or more blackouts of undetermined nature separated by a 24-hour period.** A person is **not** fit to hold an **unconditional licence**: • if the person has experienced blackouts that cannot be diagnosed as syncope, seizure or another condition. If there has been a **single blackout** or more than one blackout within a 24-hour period, a **conditional licence** may be considered by the driver licensing authority subject to at least **annual review**, taking into account information provided by the **treating doctor** as to whether the following criterion is met: • there have been no further blackouts for at least **6 months**. If there have been **two or more blackouts** separated by at least 24 hours, a **conditional licence** may be considered by the driver licensing authority subject to at least **annual review**, taking into account information provided by the **treating doctor** as to whether the following criterion is met: • there have been no further blackouts for at least **12 months**.	**A person should not drive for 5 years following a single blackout of undetermined nature.** **A person should not drive for 10 years following two or more blackouts of undetermined nature separated by a 24-hour period.** A person is **not** fit to hold an **unconditional licence**: • if the person has experienced blackouts that cannot be diagnosed as syncope, seizure or another condition. If there has been a **single blackout** or more than one blackout within a 24-hour period, a **conditional licence** may be considered by the driver licensing authority subject to at least **annual review**, taking into account information provided by an **appropriate specialist** as to whether the following criterion is met: • there have been no further blackouts for at least **5 years**. If there have been **two or more blackouts** separated by at least 24 hours, a **conditional licence** may be considered by the driver licensing authority subject to at least **annual review**, taking into account information provided by an **appropriate specialist** as to whether the following criterion is met: • there have been no further blackouts for at least **10 years**.

Medical standards for licensing – cardiovascular conditions

Condition	Private standards (Drivers of cars, light rigid vehicles or motorcycles unless carrying public passengers or requiring a dangerous goods driver licence – refer to definition in **Table 3**)	Commercial standards (Drivers of heavy vehicles, public passenger vehicles or requiring a dangerous goods driver licence – refer to definition in **Table 3**)
Syncope Refer also to section 1. Blackouts.	The person can resume driving within 24 hours if the episode was vasovagal in nature with a clear-cut precipitating factor (e.g. venesection) and the situation is unlikely to occur while driving. The driver licensing authority should not be notified. The person should **not** drive for at least **4 weeks** after syncope due to other cardiovascular causes. A person is **not** fit to hold an **unconditional licence**: • if the condition is severe enough to cause episodes of loss of consciousness without warning. A **conditional licence** may be considered by the driver licensing authority subject to **periodic review**, taking into account the nature of the driving task and information provided by the **treating doctor** as to whether the following criteria are met: • the underlying cause has been identified; **and** • satisfactory treatment has been instituted; **and** • the person has been symptom-free for at least **4 weeks**.	The person can resume driving within 24 hours if the episode was vasovagal in nature with a clear-cut precipitating factor (e.g. venesection) and the situation is unlikely to occur while driving. The driver licensing authority should not be notified. The person should **not** drive for at least **3 months** after syncope due to other cardiovascular causes. A person is **not** fit to hold an **unconditional licence**: • if the condition is severe enough to cause episodes of loss of consciousness without warning. A **conditional licence** may be considered by the driver licensing authority subject to **annual review**, taking into account the nature of the driving task and information provided by the **treating specialist** as to whether the following criteria are met: • the underlying cause has been identified; **and** • satisfactory treatment has been instituted; **and** • the person has been symptom-free for **3 months**.

Medical standards for licensing – cardiovascular conditions

Condition	Private standards (Drivers of cars, light rigid vehicles or motorcycles unless carrying public passengers or requiring a dangerous goods driver licence – refer to definition in **Table 3**)	Commercial standards (Drivers of heavy vehicles, public passenger vehicles or requiring a dangerous goods driver licence – refer to definition in **Table 3**)
Paroxysmal arrhythmias (e.g. supraventricular tachycardia, atrial flutter, idiopathic ventricular tachycardia)	A person is **not** fit to hold an **unconditional licence**: • if there was near or definite collapse. A **conditional licence** may be considered by the driver licensing authority subject to **periodic review***, taking into account the nature of the driving task and information provided by the **treating doctor** as to whether the following criteria are met: • there is a satisfactory response to treatment; **and** • there are normal haemodynamic responses at a moderate level of exercise; **and** • there are minimal symptoms relevant to driving (chest pain, palpitations, breathlessness). ** Where the condition is considered to be cured, the requirement for periodic review may be waived.*	The non-driving period is at least **4 weeks**. A person is **not** fit to hold an **unconditional licence**: • if there was near or definite collapse. A **conditional licence** may be considered by the driver licensing authority subject to **periodic review***, taking into account the nature of the driving task and information provided by the **treating specialist** as to whether the following criteria are met: • there is a satisfactory response to treatment; **and** • there are normal haemodynamic responses at a moderate level of exercise; **and** • there are minimal symptoms relevant to driving (chest pain, palpitations, breathlessness). The person should not drive for: • at least **4 weeks** following PCI; • at least **4 weeks** following initiation of successful medical treatment. ** Where the condition is considered to be cured, the requirement for periodic review may be waived.*

Summary

- Syncope is a TLOC due to cerebral hypoperfusion, with rapid onset, short duration and rapid recovery
- History is key to diagnosis, along with examination and investigations if indicated
- Risk stratification is largely based on identifying cardiac causes of syncope

Summary

- Management of VVS is largely conservative and can be managed in primary care
- Evidence or suspicion of cardiac disease or cardiogenic syncope should be referred for investigation and to cardiology
- High risk syncope (eg CHB, tachyarrhythmia, severe aortic stenosis) should be referred to ED

Further Information

peregrine.green@ths.tas.gov.au

https://www.escardio.org/guidelines/clinical-practice-guidelines/all-esc-practice-guidelines/syncope-guidelines-on-diagnosis-and-management-of/

https://academic.oup.com/eurheartj/article-abstract/39/21/e43/4939242?redirectedFrom=fulltext

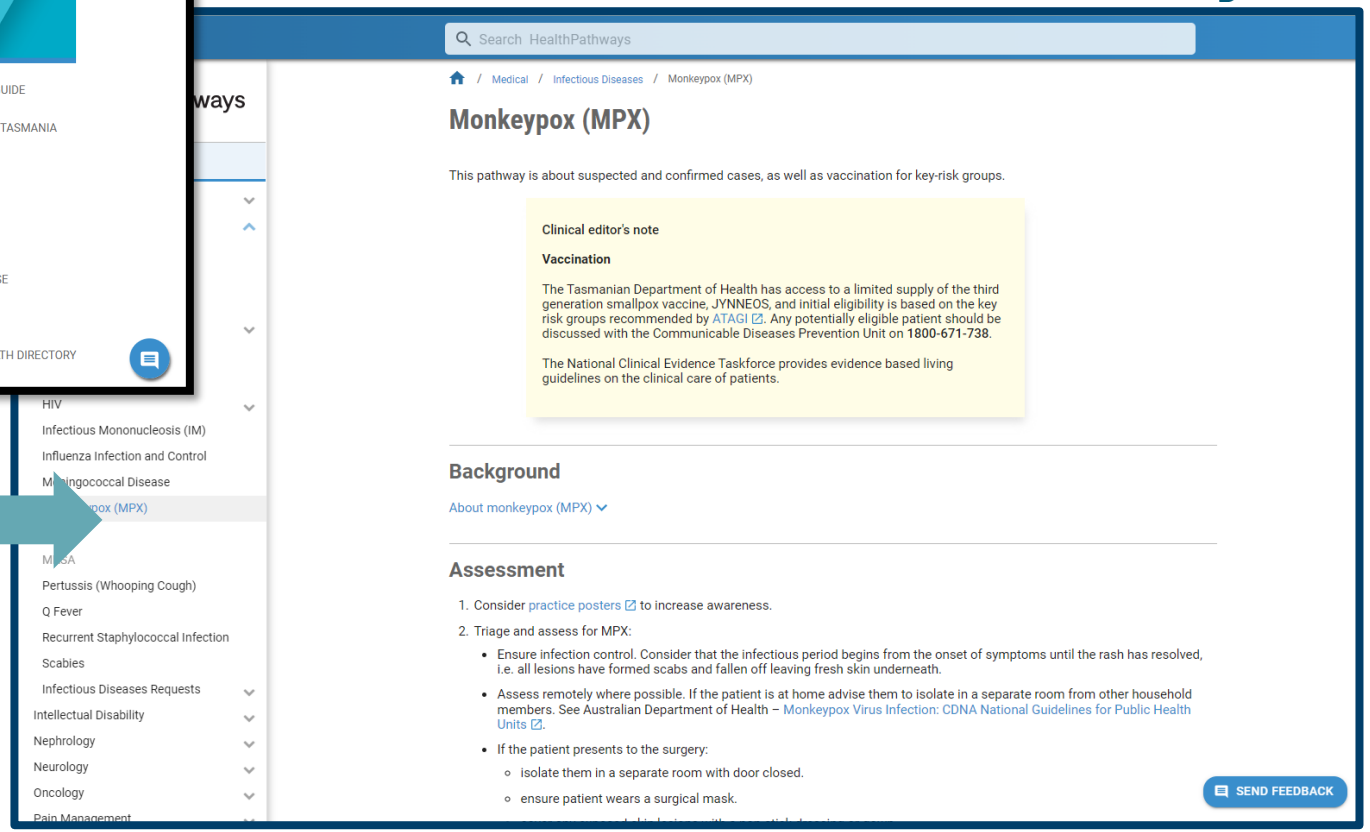
https://www.ahajournals.org/doi/10.1161/cir.0000000000000499

Questions?

Tasmanian HealthPathways

Tasmanian HealthPathways is a web-based information portal developed by Primary Health Tasmania. It is designed to help primary care clinicians plan local patient care through primary, community and secondary healthcare systems.

tasmania.communityhealthpathways.org



Tasmanian HealthPathways

To gain access to HealthPathways, please email
healthpathways@primaryhealthtas.com.au

Community HealthPathways

HEALTHPATHWAYS

CPD Events

Tuesday 12 May 2026 – Online and in person, 6.30pm to 8pm (in person registration from 6pm)
Multidisciplinary Care in Diabetes: The Cycle of Care and Beyond

Wednesday 20 May 2026 – 6.30pm to 8pm
Dementia Care for GPs: Behaviour Support, Services and Psychotropics

View more events...

Latest News

4 May
Diphtheria outbreak in northern Australia

Primary Health Tasmania has issued a *Primary Care Alert* for local health providers regarding a diphtheria outbreak in northern Australia. Read more here.

9 March
PRECISE Genomics in Primary Care portal now live

The PRECISE Genomics in Primary Care Portal helps GPs quickly identify genetic red flags and make appropriate referrals. It offers concise fact sheets, e-learning, and practical guidance to embed genomics in everyday practice.

30 January
Infant formula recall: Sanulac Nutritionals Australia

Public Health Services at the Tasmanian Department of Health advises that Food Standards Australia New Zealand (FSANZ) have issued a food recall for 2 batches of infant formula produced by Sanulac Nutritionals Australia Pty Ltd. Read more...

Pathway Updates

Updated – 14 May
Pruritus (Itch)

Updated – 8 May
Shoulder Pain

NEW – 8 May
Acute Shoulder Trauma

Updated – 8 May
Shoulder Dislocation and Chronic Instability

Updated – 8 May
Fibroids

VIEW MORE UPDATES...

About HealthPathways

- What is HealthPathways?
- How do I use HealthPathways?
- How do I send feedback on a pathway?

Quick Links

- ONLINE LEARNING HUB
- PRIMARY HEALTH TASMANIA
- RACGP RED BOOK
- FINDHELPTAS
- MBS ONLINE
- NPS MEDICINEWISE
- PBS
- TASMANIAN HEALTH DIRECTORY
- PRIMARY HEALTH TASMANIA EVENTS

SEND FEEDBACK

CPD Hours for HealthPathways Use by Specialist General Practitioners

About Continuing Professional Development (CPD)

The aim of the continuing professional development (CPD) requirements of the Medical Board of Australia is to support quality, lifelong learning for doctors that is relevant, effective, and evidence-based.

The 3 core elements of CPD are:

1. CPD homes – for quality assurance
2. Professional development plans – for purpose
3. Different types of CPD – for value

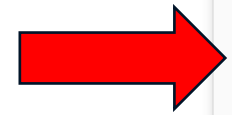
Using HealthPathways for CPD

HealthPathways is a source of contemporary and practical clinical information, localised to the geographical region of the medical practitioner. Application of knowledge contained within pathways to the individual patient provides an opportunity for reflection upon current understanding of the patient's clinical condition, and how it may be improved. This reflective learning can be self-reported as a CPD activity.

- Clinicians with an individual HealthPathways account can access a CPD Reporting tool to help log their HealthPathways CPD activity.

> **CPD reporting**
>
> Allows clinicians to:
>
> - view an automatic log of time spent in HealthPathways (this log is private and secure).
> - select specific logs relevant to their personal CPD, and add reflections and learning notes.
> - generate and export a PDF report for easy submission to CPD Homes.
>
> To access CPD Reporting, clinicians need to be logged into their individual HealthPathways account, and then click in the secondary pane on the right-hand side of the HealthPathways site.

- Clinicians without an individual HealthPathways account can still self-report time spent in HealthPathways as a reflective activity. To help reporting, reflective learning templates have been developed for both colleges:



Search results for **syncope**

65 results found

Presyncope and Syncope

This pathway is for patients who present with a blackout, faint, dizzy turn, or collapse.

First Seizure in Adults

This pathway is for patients presenting with a possible seizure before a diagnosis of epilepsy. See also: Epilepsy in Adults | Transient Loss of Consciousness

Palpitations

Cardiology

Long QT Syndrome

Falls - Screening, Prevention, and Management

See also Osteoporosis.

Non-acute General Medicine Assessment

Afebrile Seizures in Children

Acute Chest Pain

This pathway is about the initial approach to acute (< 72 hour) chest pain in adults. See also: Non-acute Chest Pain and Angina | Acute Coronary Syndrome

General Medicine

Community HealthPathways

Tasmania

- Advance Care Planning (ACP)
- Assault or Abuse
- Cardiology
  - Acute Coronary Syndrome
  - Anticoagulation
  - Atrial Fibrillation (AF)
  - Cardiac Catheterisation Complications
  - Cardiovascular Drugs and Monitoring
  - Cardiovascular Risk Assessment (CVRA)
  - Chest Pain
  - Presyncope and Syncope
  - Heart Failure
  - Heart Murmurs in Adults
  - Heart Valve Disease
  - Hyperlipidaemia and Familial Hypercholesterolaemia
  - Infective Endocarditis Prophylaxis
  - Long QT Syndrome
  - Palpitations
  - Postoperative Care of Cardiac Patients
  - Cardiology Requests
- Dermatology

Presyncope and Syncope

Expand all
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This pathway is for patients who present with a blackout, faint, dizzy turn, or collapse.

Red flags

- Exertional syncope

Background

About presyncope and syncope

Assessment

1. Take a history – ask about:
   - circumstances before the episode.
   - symptoms during the episode.
   - witness description of episode.
   - conclusion of episode.
   - background history.
   - concerning features.
2. Perform examination:
   - Look for changes in postural blood pressure with a manual sphygmomanometer.
   - Check heart rate and rhythm, noting any postural changes that could represent postural orthostatic tachycardia syndrome (POTS).
   - Look for pallor.
   - Auscultate for heart murmurs.
   - Assess for neurological focal signs, including the Dix-Hallpike manoeuvre to confirm benign paroxysmal positional vertigo (BPPV).
   - Consider checking capillary blood glucose.

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Cardiology Requests
Dermatology

- Consider checking capillary blood glucose.
- Consider concerning features on examination.

Concerning features on examination

- Persistent hypotension (systolic blood pressure < 90 mmHg)
- Bradycardia < 50 beats per minute, especially if symptomatic
- Tachycardia (atrial fibrillation or supraventricular tachycardia)
- Irregular pulse (atrial fibrillation)
- Loud, harsh systolic murmur suggestive of left ventricular outflow tract (LVOT) obstruction e.g., aortic stenosis, hypertrophic obstructive cardiomyopathy (HOCM).
- Focal neurological deficits (TIA or stroke)

3. Arrange investigations based on suspected cause.
4. Consider differential diagnoses:
   - Cardiac syncope
   - Orthostatic syncope or orthostatic postural hypotension (common)
   - Vasovagal or reflex syncope
   - Vertigo
   - Seizure
   - Transient ischaemic attack (TIA) – posterior circulation TIAs may occasionally result in unconsciousness.
   - Anxiety and panic attacks
   - Metabolic causes – hypoglycaemia and Addison's disease
   - Functional dizziness (persistent postural-perceptual dizziness, or PPPD)
   - Multifactorial causes
   - Postural orthostatic tachycardia syndrome (POTS)

Management

1. If syncope or presyncope with concerning features on history, examination, or ECG, arrange emergency assessment.

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Management

1. If syncope or presyncope with concerning features on history, examination, or ECG, arrange emergency assessment.
2. Manage according to possible underlying cause – follow relevant pathway if available:
   - Vasovagal or orthostatic causes – these cause the majority of syncopal/presyncopal episodes and can be managed in general practice.
   - Seizure
   - Transient ischaemic attack (TIA)
   - Vertigo
   - Functional dizziness (PPPD)
   - Anxiety and panic attacks
   - Hypoglycaemia
   - Alcohol or illicit drug use
   - Suspected postural orthostatic tachycardia syndrome (POTS)
3. Consider requesting non-acute cardiology assessment if there are recurrent episodes and:
   - recurrent or new syncope and the cause is unclear.
   - management has been ineffective.
   - there is complex polypharmacy.
4. If older adult, be aware of potential complications caused by multiple medications, falls, injuries, and cognitive impairment:
   - See Falls Prevention for falls risk assessment and management.
   - If significant symptoms or co-morbidities, consider conducting older adults' health assessment.
5. Consider driving safety – see Driving Assessment.

Request

- If syncope or presyncope with concerning features on history, examination, or ECG, arrange emergency assessment.
- Consider requesting non-acute cardiology assessment if there are recurrent episodes and:
  - recurrent or new syncope and the cause is unclear.
  - management has been ineffective.

Q&A

Some final words

- After this webinar end, your browser will open a link to an evaluation survey.
- Statements of attendance will be emailed to participants.
- For event queries, please contact events@primaryhealthtas.com.au

Thank you

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