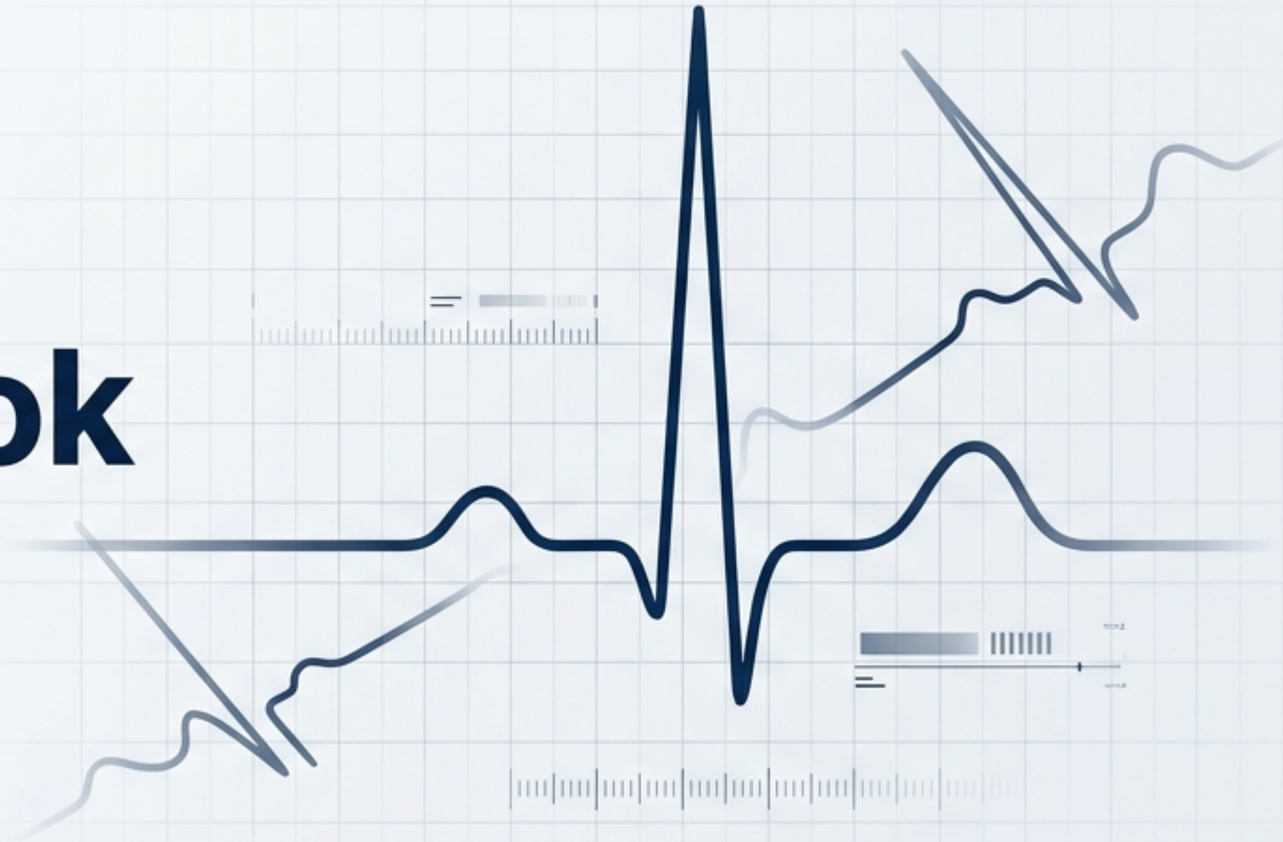
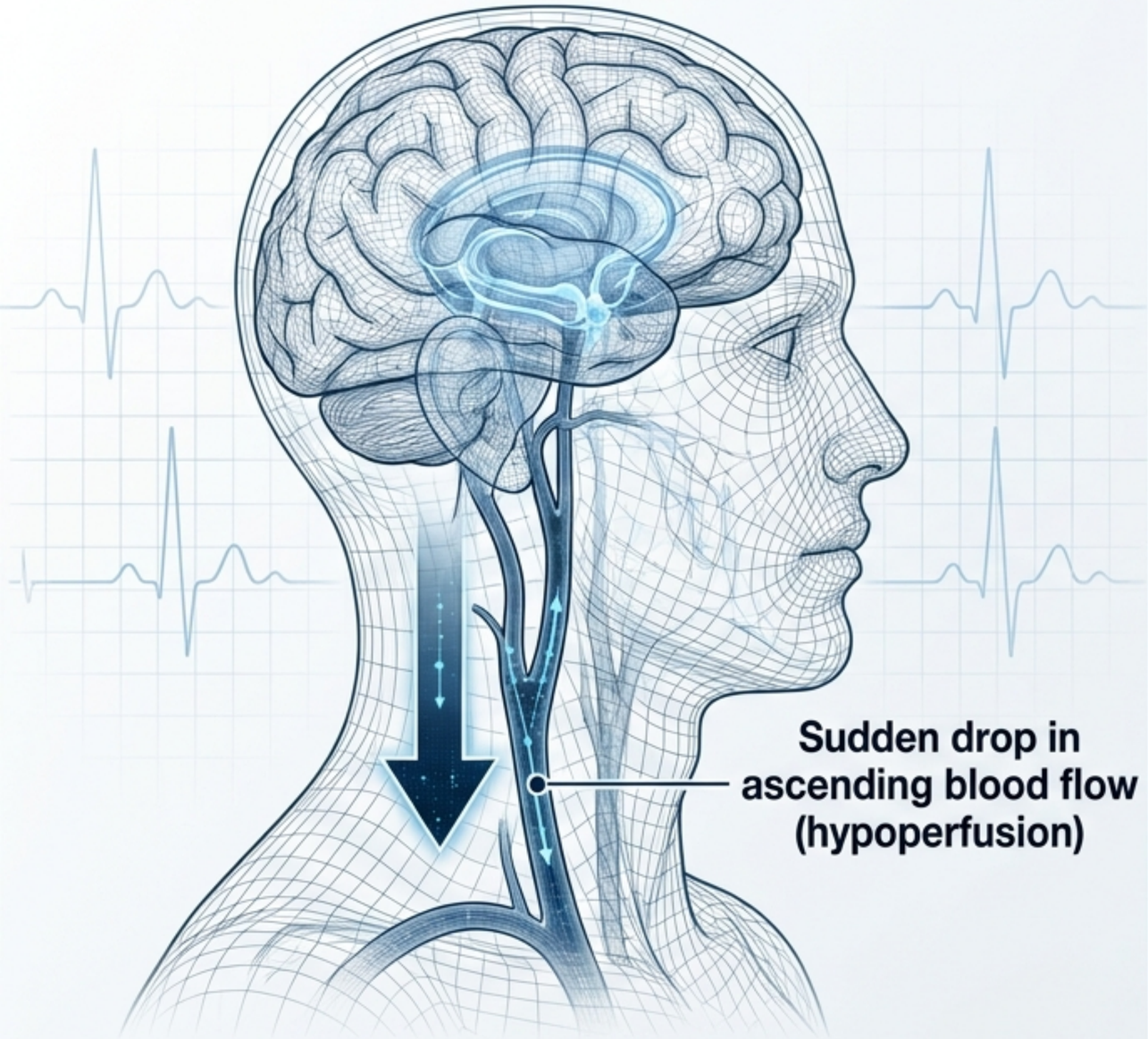
Med2Date

Syncope: The Definitive Clinical Playbook

A visual triage, diagnostic, and risk-stratification guide for Australian practitioners.



Global Cerebral Hypoperfusion: The Mechanics and the Burden



The Definition

Transient loss of consciousness (TLOC).
Rapid onset. Short duration.
Spontaneous, complete recovery.
No neurological sequelae.

The Epidemiology

- **3.5%** lifetime prevalence.
- Accounts for **1–3%** of all ED presentations and **6%** of acute medical admissions in Australia.

The Impact

- **High injury rate** (6–30% of events result in trauma/fractures).
- Substantial **economic burden** ($1,500–$2,000 per inpatient admission).

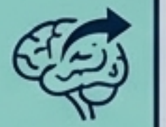
Triage Fork: Is This Actually Syncope?

Syncope		Seizure / Mimic
Brief, <15s, occurs after LOC	**Myoclonus**	Prolonged, rhythmic, concurrent with LOC
Rapid recovery <5 mins, fatigue/nausea	**Post-Event**	Prolonged postictal confusion >5 mins, Todd's paralysis
Tongue biting at tip, non-specific	**Physical Injury**	Tongue biting at lateral aspect

Clinical Alert: Up to 30% of patients referred to epilepsy clinics actually have convulsive syncope. Always exclude TLOC mimics first.

The Aetiology Matrix: Stratifying the Causes

Neurally Mediated



Prevalence
60–70%

Typical Prodrome
Nausea, warmth, diaphoresis, visual dimming (30-60s).

Recovery
Rapid, with persistent fatigue/nausea.

1-Year Mortality
<5%

Orthostatic Hypotension

Prevalence
10–15%

Typical Prodrome
Lightheadedness upon standing, post-prandial.

Recovery
Rapid upon going supine.

1-Year Mortality
5–10%

Cardiac

Prevalence
15–20% (Arrhythmic + Structural)

Typical Prodrome
Sudden onset, often zero prodrome, preceding palpitations, or exertional.

Recovery
Rapid, but high risk of immediate recurrence or sudden cardiac death.

1-Year Mortality
20–30%

Initial Evaluation: History and Vital Signs

1. Background

Cardiac history, family history of sudden cardiac death (<40 yrs), offender medications.

2. Prodrome

Triggers (standing, micturition, post-exertional). Gradual vs. sudden onset.

3. The Event

Witness account is vital. Duration of LOC (<30s). Skin color (pallor vs. cyanosis).

4. Recovery

Time to baseline cognition.

Orthostatic Vitals Monitor (Active Standing Protocol)

Protocol

Supine for ≥5 mins, then check at 1, 3, and 5 mins standing.

Diagnostic Threshold

Systolic BP drop ≥20 mmHg OR Diastolic BP drop ≥10 mmHg within 3 minutes.

POTS Variant

HR increase ≥30 bpm (≥40 bpm if 12-19 yrs) without BP drop.

The ‘Must-Not-Miss’ ECG Board

Bifascicular Block

Risk: Progression to complete heart block. **Action:** Cardio admission.

Prolonged QTc

Risk: Torsades de Pointes.
Action: Lytes, med review.

Brugada Pattern

Risk: Ventricular Fibrillation.
Action: Urgent EP referral.

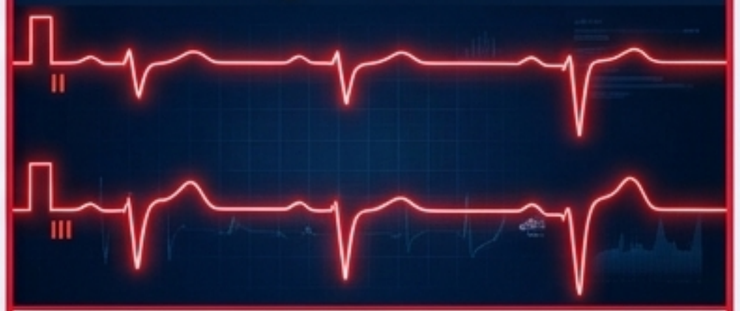
Pre-excitation (WPW)

Risk: SCD with Atrial Fibrillation.
Action: EP ablation.

High-Grade AV Block

Risk: Infra-nodal failure.
Action: Urgent pacing.

Deep Q Waves



Risk: Prior MI / VT scar substrate.
Action: Echo, Cardio review.

High-Risk Clinical Features Warranting Immediate Admission

CRITICAL ALERT: ADMISSION REQUIRED

- Syncope occurring during exertion or while supine.
- New-onset or severe chest pain, dyspnoea, or palpitations.
- Severe structural heart disease (LVEF <35%, severe AS, HOCM).
- Family history of sudden cardiac death (age <40) or channelopathy.
- Syncope resulting in significant physical injury.
- Persistent abnormal vital signs in ED (hypotension, tachycardia, hypoxia).
- Age >65 with first episode and no clear vasovagal trigger.

Takeaway: Presence of ANY single feature dictates admission for investigation, regardless of other risk scores.

Risk Score Showdown: Predicting 30-Day Serious Outcomes

San Francisco Syncope Rule (SFSR)

Focus: The "CHESS" Mnemonic.

- CHF history
- Haematocrit <30%
- **ECG abnormal**
- SOB
- Systolic BP <90

≥1 criterion = high risk.
High negative predictive value (~98%).

ROSE Criteria

Focus: Biomarker-driven.

- **BNP** ≥300 pg/mL (strongest predictor)
- **Q-waves**
- SpO2 ≤94%
- **Systolic BP** ≤90
- positive FOBT

≥1 criterion = high risk.

Canadian Syncope Risk Score (CSRS)

Focus: Robustly validated, multipoint scale (-3 to +4).

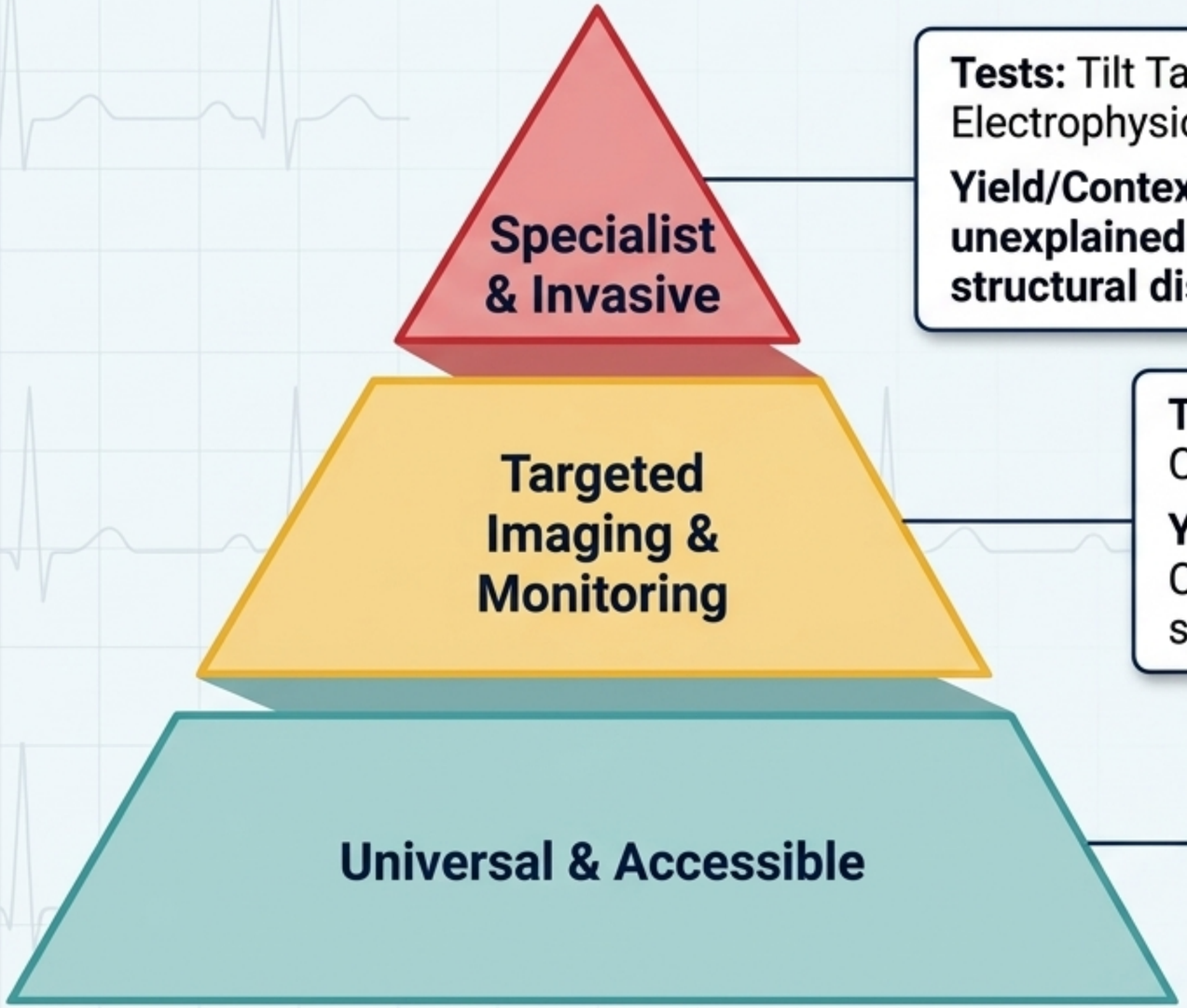
- Vasovagal predisposition (-1)
- **high-sensitivity troponin** (+2)
- QRS axis/duration (+1)
- ED diagnosis

Low Risk (<2% SAE, safe discharge)

Medium (5-15%, observation)

High (25-50%, admit to telemetry)

The Diagnostic Escalation Funnel



Tests: Tilt Table Test, Implantable Loop Recorder (ILR), Electrophysiology Study (EPS), Cardiac MRI.

Yield/Context: ILR has 33-50% yield at 12 months for unexplained recurrent cases. EPS for VT substrate in structural disease.

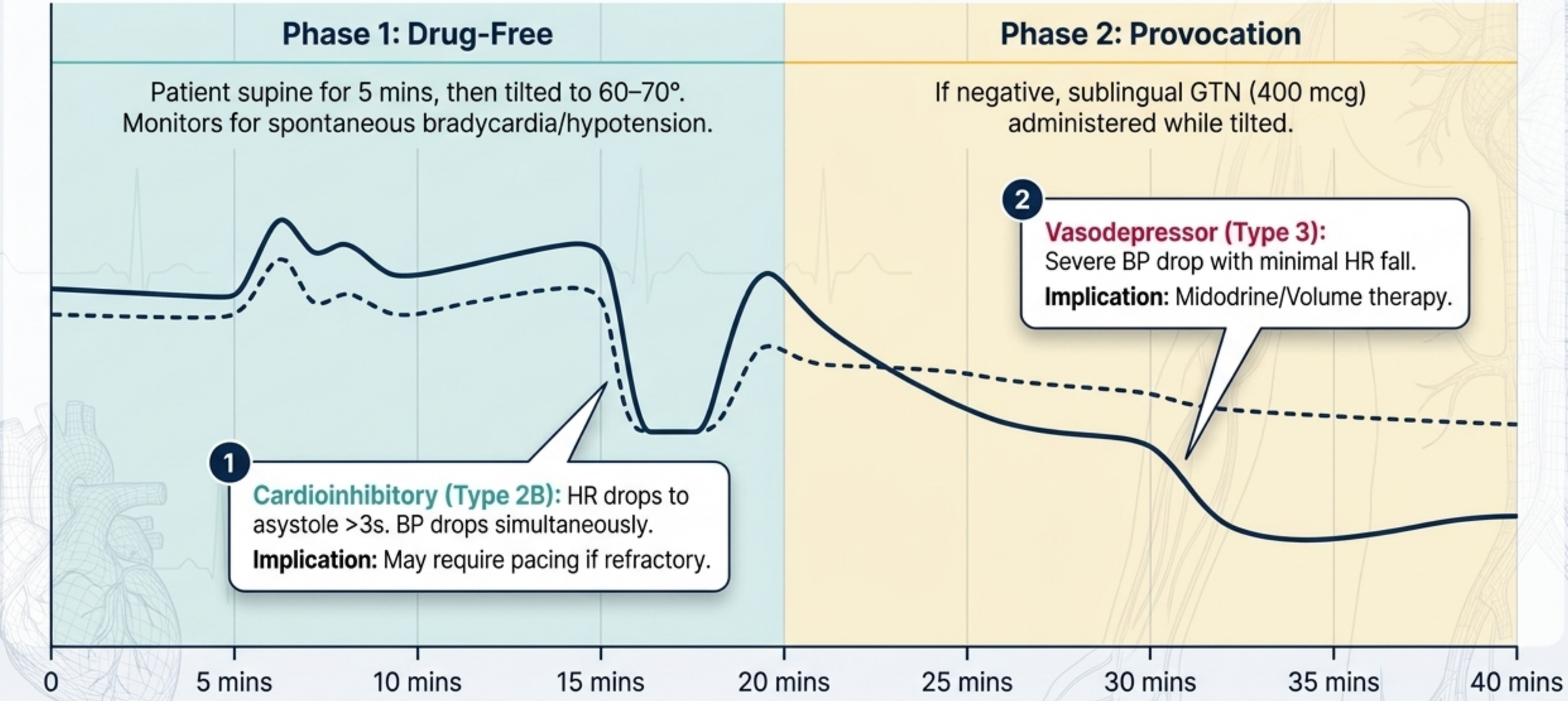
Tests: Transthoracic Echo, 24-48h Holter Monitor, CTPA.

Yield/Context: Echo for suspected structural disease. CTPA for PE (5-10% of presentations). Holter for daily symptoms (1-2% yield).

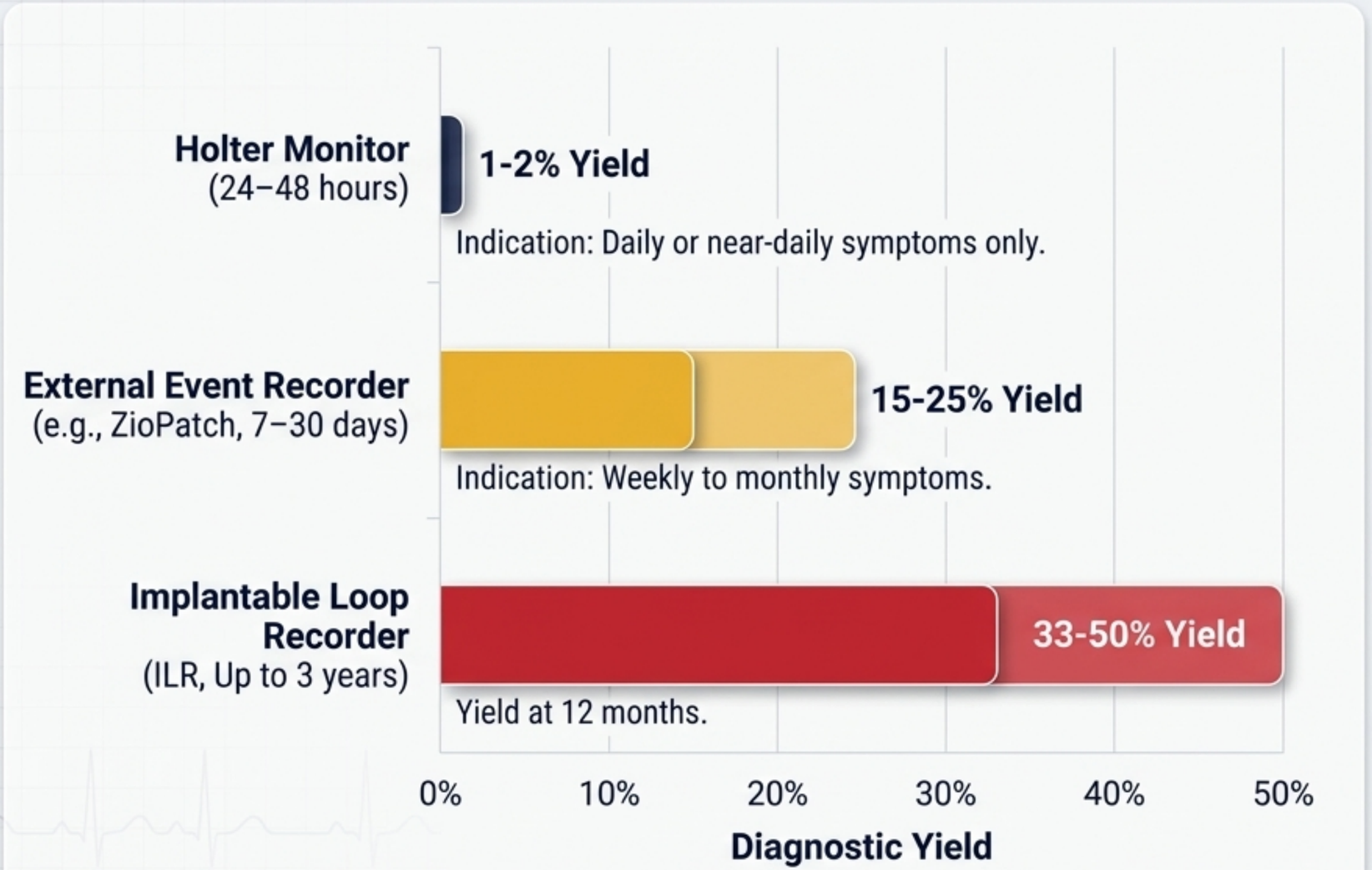
Tests: 12-Lead ECG (Mandatory), FBC/UEC/Glucose, **High-sensitivity Troponin, BNP/NT-proBNP.**

Yield/Context: Required for all ED presentations. Troponin non-specific alone but vital for CSRS.

The Head-Up Tilt Table Protocol



Ambulatory Monitoring: Duration vs. Diagnostic Yield



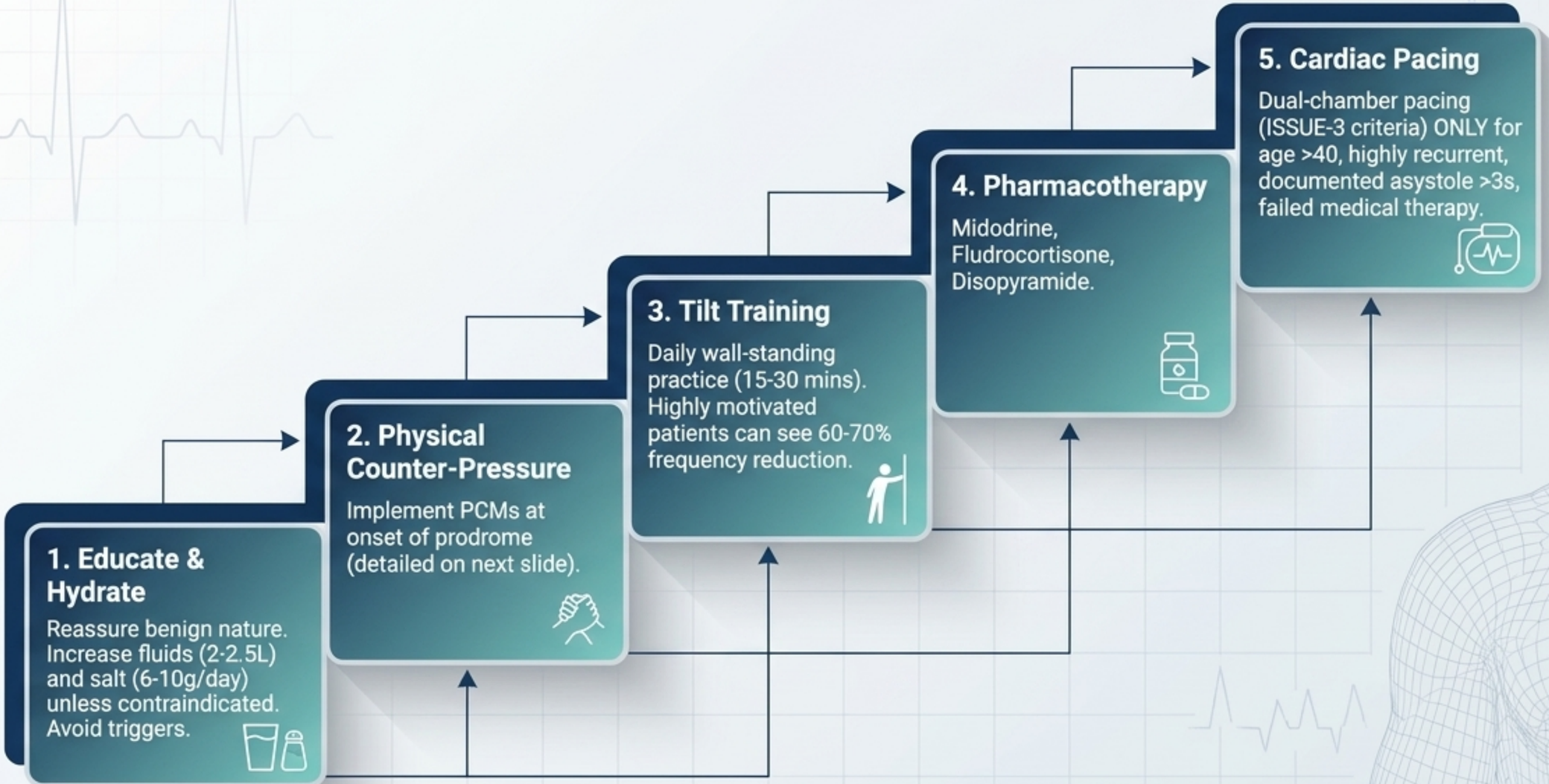
Guideline Imperative

ESC/CCS recommend early implantation for **recurrent unexplained syncope.**

Do not wait for **multiple recurrent injuries.**

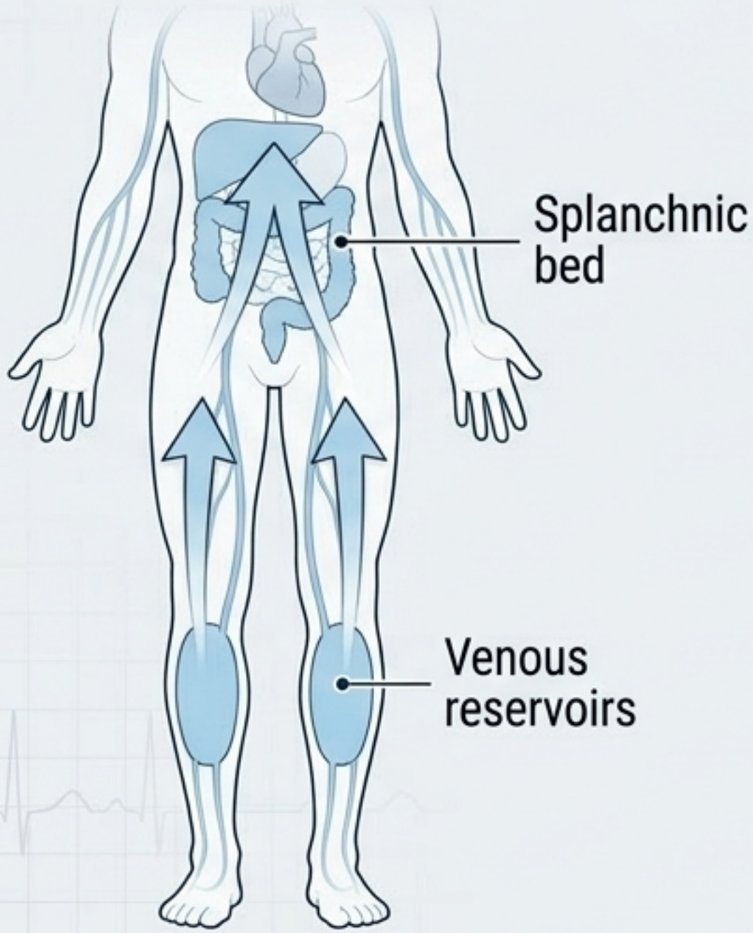
Implantation is a minor day procedure.

Managing Vasovagal Syncope: The Stepwise Approach



The Mechanics of Counter-Pressure (PCMs)

Concept: Muscle contraction mechanically compresses venous reservoirs, forcing pooled blood back up against gravity, increasing venous return, preload, and stroke volume.



1. Leg Crossing

Cross legs, squeeze thighs together, clench buttocks/core. (Increases systolic BP by 20–40 mmHg. Most effective).

2. Squatting

Rapid squat at prodrome. Maximizes leg vein compression.

3. Arm Tensing

Isometric grip/pulling. Useful when seated or unable to stand safely.

Managing Orthostatic Hypotension: Remove, Replete, Treat

1. Identify & Correct (The 'Stop' Phase)

- **Medication Review:** The highest yield intervention. Reduce/cease alpha-blockers (prazosin), vasodilating beta-blockers, diuretics, TCAs, antipsychotics.
- **Assess Neuropathy:** Look for diabetes, Parkinson's, amyloidosis.

2. Non-Pharmacological Measures

- **Elevate** head of bed 10–20° (reduces nocturnal polyuria).
- **Small, frequent** meals (avoids splanchnic pooling).
- Thigh-high compression stockings (30-40 mmHg) or binders.

3. Pharmacotherapy Escalation

- **Transition** to specific agents if steps 1 & 2 fail. (See next dashboard).

The Pharmacotherapy Dashboard

Midodrine (Gutron®)

Class: Alpha-1 agonist (vasoconstriction). First-line for OH.

Dose: 2.5–10 mg PO TDS. (Last dose ≥4h before bed).

⚠ **Warning:** Supine hypertension, urinary retention. PBS General Benefit.

Fludrocortisone (Florinef®)

Class: Mineralocorticoid (volume expansion).

Dose: 0.1–0.2 mg PO mane.

⚠ **Warning:** Hypokalaemia, fluid overload. Use caution in renal impairment.

Disopyramide (Rythmodan®)

Class: Class IA antiarrhythmic (negative inotrope/anticholinergic).

Dose: 100-150 mg PO BD.

⚠ **Warning:** Avoid if eGFR <30. Contraindicated in severe hepatic impairment.

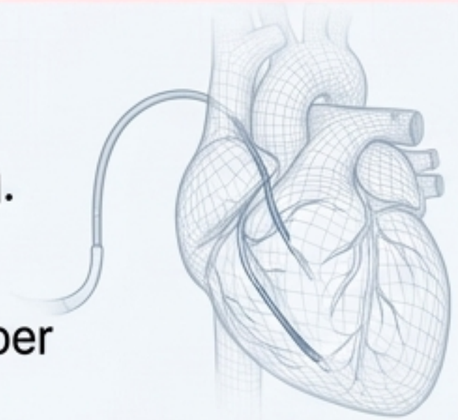
Droxidopa (Northera®)

Class: Norepinephrine precursor.

⚠ **Status:** Not PBS-listed. Special Access Scheme (SAS) Category B only.

Intervening on Cardiac Syncope

Bradyarrhythmias (SND, AV Block)



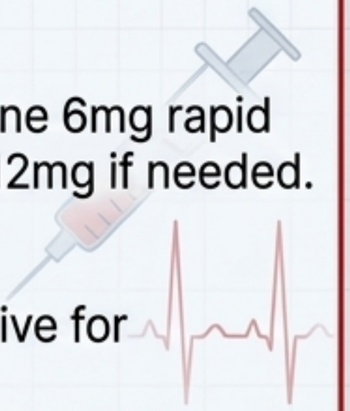
Acute

IV Atropine (0.5-1mg), transcutaneous pacing.

Definitive

Permanent dual-chamber pacemaker (DDD).

Supraventricular Tachycardia (SVT)



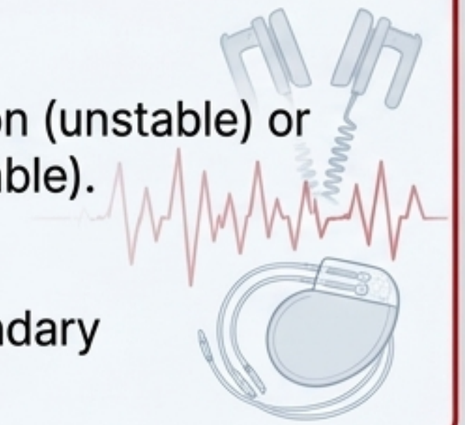
Acute

Vagal manoeuvres → IV Adenosine 6mg rapid push (flush 20mL NS) → repeat 12mg if needed.

Definitive

Catheter ablation (90-95% curative for AVNRT/WPW).

Ventricular Tachycardia (VT/VF)



Acute

Synchronised cardioversion (unstable) or IV Amiodarone 150mg (stable).

Definitive

ICD implantation for secondary prevention / SCD risk.

Structural Disease

Aortic Stenosis

Urgent TAVI or SAVR.

HOCM

Beta-blockers, avoid dehydration. ICD if high risk.

The Volume Repletion Matrix

Acute (ED Resuscitation)

- **Protocol**
  - 500 mL 0.9% NaCl IV over 30–60 mins. Single bolus, then reassess.
- **Alternative**
  - Hartmann's solution.

Chronic (Prophylaxis for VVS/OH)

- **Fluids**
  - 2–2.5 L/day.
- **Water Bolus Trick**
  - 500 mL water rapidly over 5 mins prior to prolonged standing increases systolic BP by 20–30 mmHg.
- **Salt**
  - 6–10 g NaCl/day (via diet or 1g salt tablets).

⚠ Contraindication ⚠

Strict Contraindications for **Volume Loading**:

- Heart Failure (NYHA III-IV) | **- Chronic Kidney Disease** (eGFR <30) | **- Severe Hypertension** (BP >160/100)

⚠ Contraindication ⚠

Special Populations Dashboard

Pregnancy

- Left lateral decubitus positioning.
- Midodrine is Category B3; Fludrocortisone is Category A.
- Avoid beta-blockers in 1st trimester.

⚠ **Red flag:** PE or dissection.

Paediatrics

- Peak incidence 15-19 yrs.
- **Crucial: Exclude Long QT Syndrome** (QTc >460ms prepubertal, >480ms postpubertal).
- High risk of SIDS if missed.

Elderly (>65)

- OH prevalence up to 50% in care facilities.
- Polypharmacy is main driver (arrange Home Medicines Review).
- Check for Carotid Sinus Hypersensitivity.

Renal Impairment

- **Beware** intradialytic hypotension.
- Disopyramide requires 50% dose reduction (eGFR 30-60).
- Watch for hyperkalaemia on ECG.

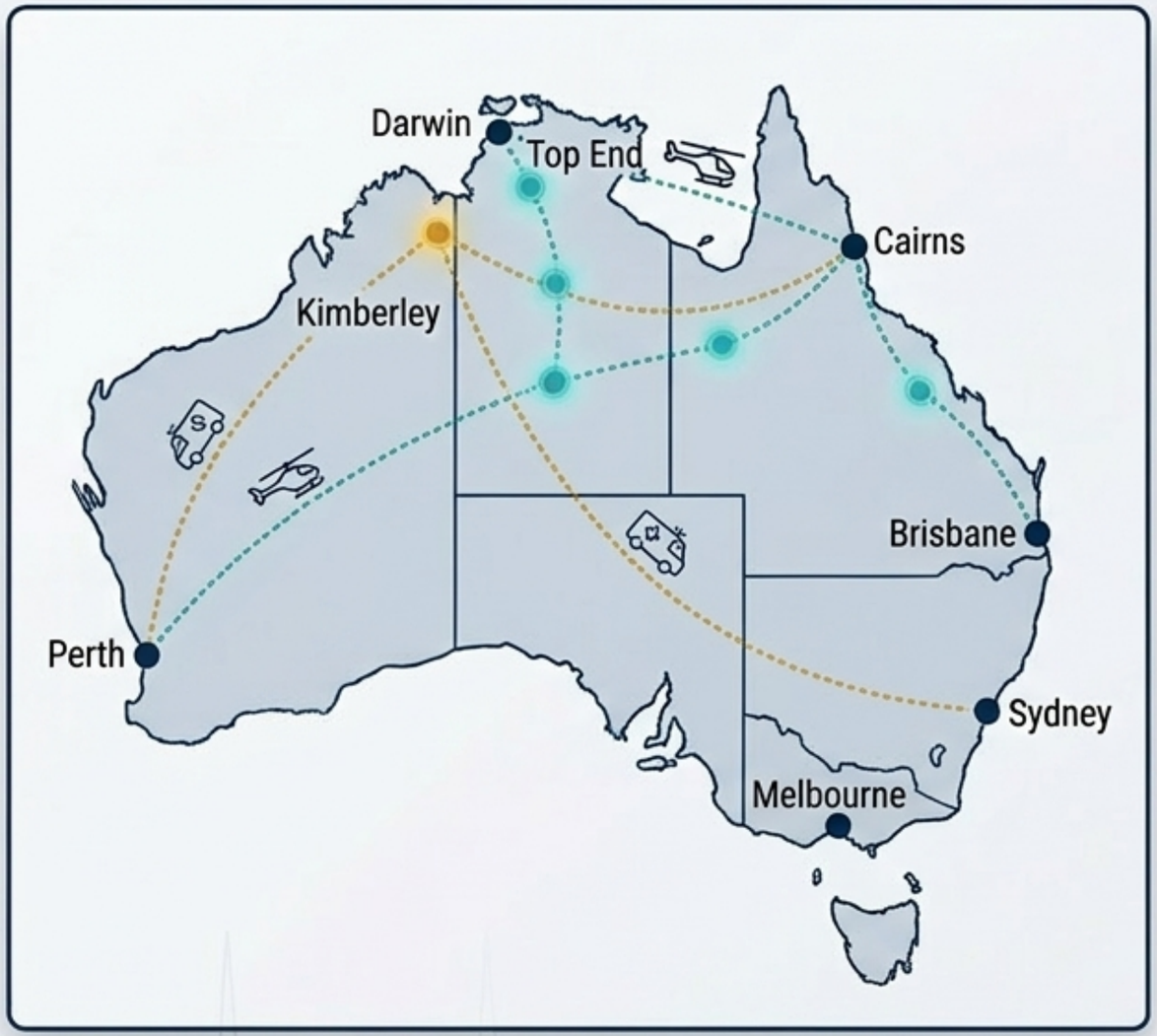
Hepatic Impairment

- Portal hypertension reduces effective volume.
- Midodrine highly beneficial here.
- Avoid Disopyramide.

Immunocompromised

- Consider CMV myocarditis, HIV neuropathy.
- **Drug Alert:** Amiodarone interacts severely with tacrolimus/cyclosporine (prolong QT).

Indigenous Health Pathways: Bridging Systemic Barriers



The Pathophysiology Burden

- **2-3x higher CV mortality**. High rates of **Rheumatic Heart Disease (RHD)** and **Endocarditis**.
- **Syncope** in Indigenous patients aged 15-45 is heavily skewed toward RHD/structural causes.

Logistical & Systemic Adaptations

- **Screening**: Mandatory Echo for ARF/RHD screening in high-prevalence zones. Check **RHDAustralia** register.
- **Diagnostics**: Utilize postal event recorders (ZioPatch) or RFDS Holters. Aeromedical retrieval needed for ILR/EPS.
- **Prescribing**: Ensure meds avoid cold-chain refrigeration. Use Closing the Gap (CTG) PBS scripts and Webster-paks via RAAHS.
- **Consultation**: Use the 'Yarning' approach. Integrate Aboriginal Health Workers.

The Universal Syncope Master Algorithm