

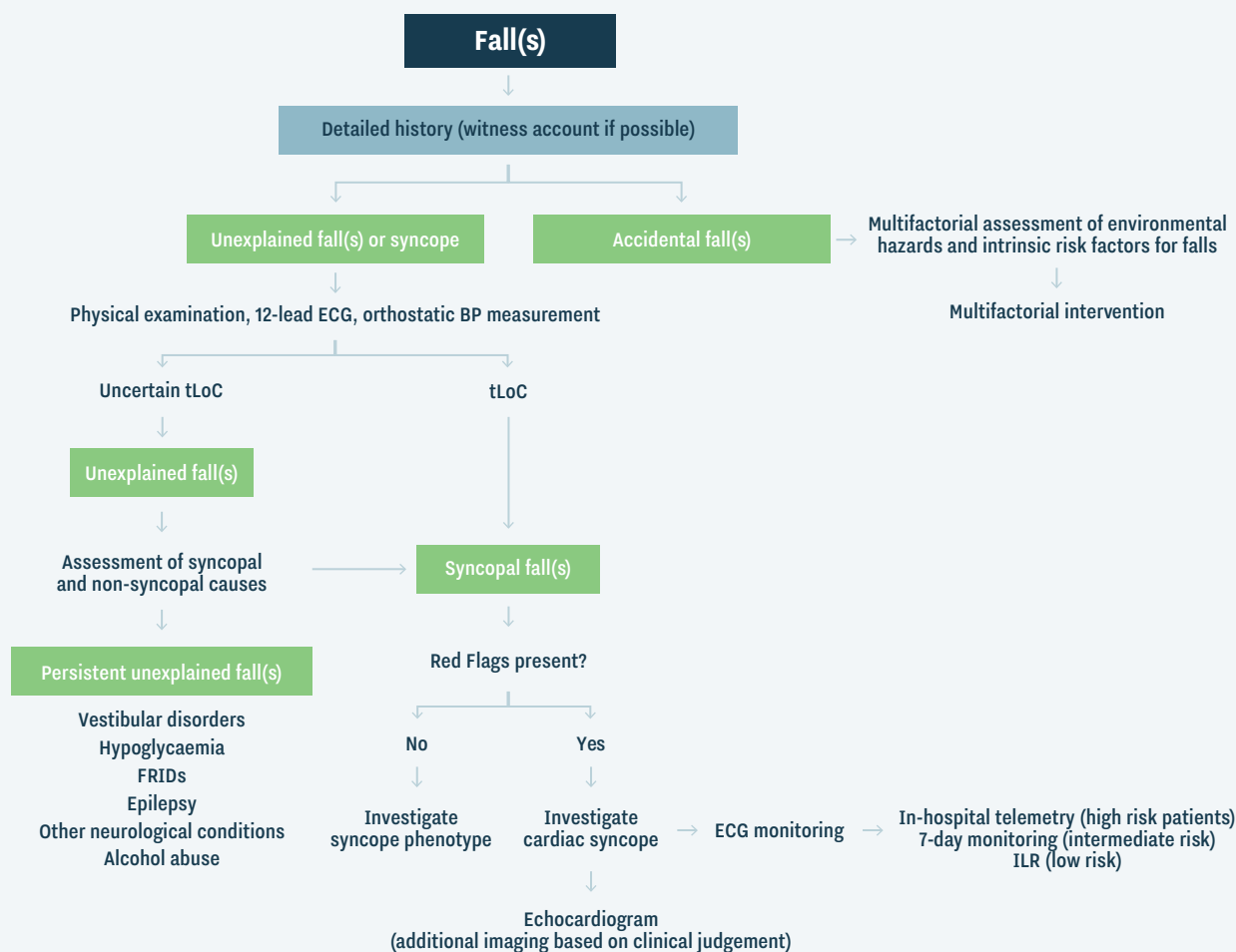
EuGMS

From falls to syncope in the older adults

Edited By: Andrea Ungar, Rose Anne Kenny, Giulia Rivasi
for the Special Interest Group on Cardiovascular medicine

Diagnostic pathway (I)

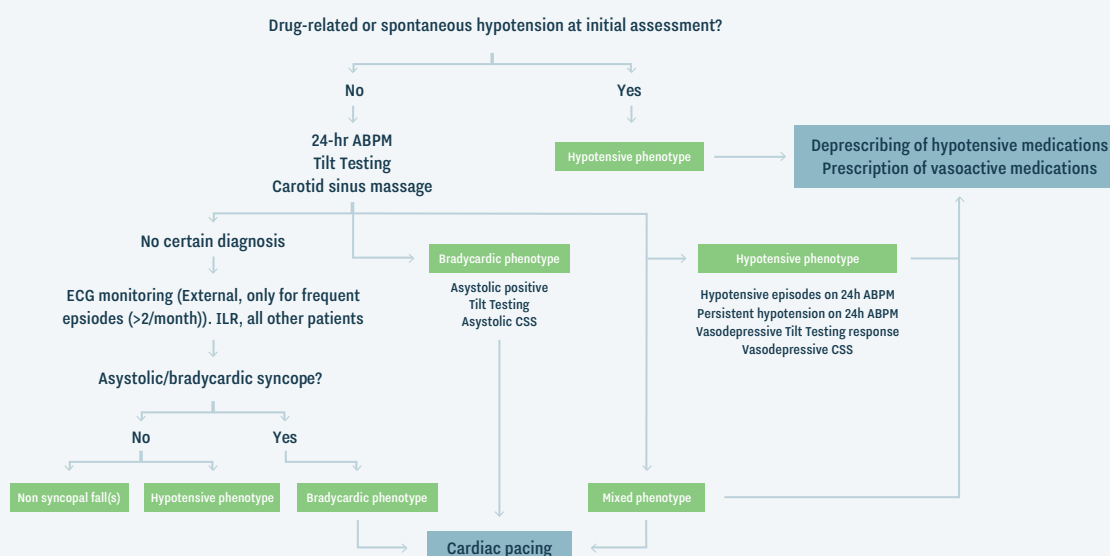
From falls to syncope in the older adults



BP: blood pressure FRIDs: fall-risk increasing drugs ILR: implantable loop recorder tLoC: transient loss of consciousness

Diagnostic pathway (II)

Investigate syncope phenotype



24h ABPM: ambulatory blood pressure monitoring CSS: carotid sinus syndrome ILR: intermittent loop recorder

Multifactorial approach

From falls to syncope in the older adults

In older adults, multiple causes of falls may be present and a multifactorial diagnostic and treatment approach is recommended, particularly in subjects with neurodegenerative disorders. The following risk factors for falls should be carefully assessed in **all recurrent fallers, irrespective to syncope or not**.

To be assessed	Risk factors	Possible intervention strategies
Physical performance	- Gait disorders (gait speed ≤ 0.8 m/s) - Balance impairment - Sarcopenia	- Environmental hazard reduction - Exercise and muscle strengthening - Use of walking aid - Nutrition assessment and intervention
Sensory deficits	- Vision loss - Hearing impairment - Vestibular disorders	- Glasses - Hearing aids - Vestibular rehabilitation
Fall-risk increasing drugs	- Antihypertensive drugs - Antidiabetic drugs - Psychoactive drugs - Antihistamines - Opioids - L-dopa and dopamine agonists	- Structured medication review and deprescribing (dose reduction or withdrawal) - Deprescribing of hypotensive meds in hypotensive phenotype
Orthostatic blood pressure response	Orthostatic hypotension	- Hydration - Muscle strengthening - Medication review

When to consider **referral to a Syncope and Fall unit** for specialist comprehensive assessment:

Recurrent and/or unexplained falls or syncope (i.e., two or more episodes in the previous year), injurious syncope.

Fall	Unexpected event in which an individual comes to rest on the ground, floor, or lower level
Syncope	Transient loss of consciousness (LOC) due to transient global cerebral hypoperfusion and characterized by rapid onset, short duration, and spontaneous complete recovery
Persistent Unexplained fall	Fall which remains of unexplained origin after accidental causes and a diagnosis of syncope have been excluded the diagnostic work-up
Prodrome	Any symptom preceding LOC. It might be cardiac (chest pain, dyspnea, palpitations) or autonomic (nausea, blurred vision, lightheadedness, weakness, sweating). Atypical/absent prodrome are common in older adults
Orthostatic hypotension	Reduction in systolic blood pressure of ≥ 20 mmHg (or < 90 mmHg) or diastolic blood pressure of ≥ 10 mmHg within 3 minutes of standing. Its prevalence achieves 30% in community-dwelling older adults and approximately 50% in hospitalized patients and in older adults with dementia. It represents the most common cause of syncope at old age
Hypotensive phenotype	Syncope with predominant hypotensive mechanism. It typically occurs in patients with persistently low blood pressure and/or intermittent hypotension, i.e., orthostatic hypotension, post-prandial hypotension and other hypotensive episodes. It may be constitutional or drug-related (i.e., deriving from blood pressure lowering below the recommended target)
Bradycardic phenotype	Syncope with asystole as the predominant mechanism
Syncope and Fall Unit	Facility featuring a standardized approach to the diagnosis and management of t-LOC and falls, with specialist staff and access to evidence-based diagnostics and therapies. Different models exist depending on service practices and availability of resources. It has been demonstrated to improve syncope diagnosis while reducing syncope-related hospital admissions

High risk red flags

From falls to syncope in the older adults

Syncope circumstances

- » Syncope while supine
- » Syncope during exertion

Symptoms before syncope

- » Chest pain/discomfort
- » Breathlessness
- » Palpitations with sudden onset
- » Absence of prodrome

Patient history

- » High-risk ECG findings
- » Family history of sudden cardiac death at young age
- » Severe structural heart disease or coronary artery disease

ECG Red Flags	
Persistent bradycardia < 40 bpm	Acute ischaemic changes
Sinus pauses > 3 sec	Pre-excited QRS complexes
Mobitz 1 II degree AV block and III degree AV block	Early repolarization
I degree AV block with markedly prolonged PR interval	Long / short QT interval
Left bundle branch block	Brugada patterns
Tri-fascicular block	Negative T waves in right precordial leads and/or epsilon waves suggesting ARVC
Other intraventricular conduction abnormalities (QRS > 0.12 s)	Paroxysmal atrial fibrillation or supraventricular tachycardia
Pacemaker malfunction	Ventricular tachycardia

References

From falls to syncope in the older adults

- Brignole M, Moya A, de Lange FJ, et al; ESC Scientific Document Group. 2018 ESC Guidelines for the diagnosis and management of syncope. *Eur Heart J*. 2018 Jun 1;39(21):1883-1948. doi: 10.1093/eurheartj/ehy037.
- Brignole M, Rivasi G, Fedorowski A, et al. Tests for the identification of reflex syncope mechanism. *Expert Rev Med Devices*. 2023;20(2):109-119. doi: 10.1080/17434440.2023.2174428.
- Donnell DO, Romero-Ortuno R, Kennelly SP, et al. The 'Bermuda Triangle' of orthostatic hypotension, cognitive impairment and reduced mobility: prospective associations with falls and fractures in The Irish Longitudinal Study on Ageing. 2023 Feb 1;52(2):afad005. doi: 10.1093/ageing/afad005.
- Fedorowski A, Kulakowski P, Brignole M, de Lange FJ, Kenny RA, Moya A, et al. Twenty-five years of research on syncope. *Europace*. 2023 25;25(8):euad163. doi: 10.1093/europace/euad163.
- Montero-Odasso M, van der Velde N, Martin F, et al; Task Force on Global Guidelines for Falls in Older Adults. World guidelines for falls prevention and management for older adults: a global initiative. *Age Ageing*. 2022 Sep 2;51(9):afac205. doi: 10.1093/ageing/afac205.
- Mossello E, Ceccofiglio A, Rafanelli M, et al. Differential diagnosis of unexplained falls in dementia: Results of "Syncope & Dementia" registry. *Eur J Intern Med*. 2018 Apr;50:41-46. doi: 10.1016/j.ejim.2017.11.006.
- Rivasi G, Rafanelli M, Mossello E, et al. Drug-Related Orthostatic Hypotension: Beyond Anti-Hypertensive Medications. *Drugs Aging*. 2020 Oct;37(10):725-738. doi: 10.1007/s40266-020-00796-5.
- Seppala LJ, Petrovic M, Ryg J, et al. STOPPFall (Screening Tool of Older Persons Prescriptions in older adults with high fall risk): a Delphi study by the EuGMS Task and Finish Group on Fall-Risk-Increasing Drugs. *Age Ageing*. 2021 Jun 28;50(4):1189-1199. doi: 10.1093/ageing/afaa249.
- Torabi P, Rivasi G, Hamrefors V, et al. Early and late-onset syncope: insight into mechanisms. *Eur Heart J*. 2022 Jun 6;43(22):2116-2123. doi: 10.1093/eurheartj/ehac017. PMID: 35139180; PMCID: PMC9170473.
- Bourke R, Doody P, Pérez S, Moloney D, Lipsitz L, Kenny RA. Cardiovascular Disorders and Falls Among Older Adults: A Systematic Review and Meta-Analysis, *The Journals of Gerontology: Series A*, Volume 79, Issue 2, February 2024, glad221, <https://doi.org/10.1093/gerona/glad221>
- Savelieva I, Fumagalli S, Kenny RA, et al. EHRA expert consensus document on the management of arrhythmias in frailty syndrome, *EP Europace*, Volume 25, Issue 4, April 2023, Pages 1249–1276, <https://doi.org/10.1093/europace/euac123>
- Donoghue O, Hernandez B, O'Connell M, Kenny RA. Using Conditional Inference Forests to Examine Predictive Ability for Future Falls and Syncope in Older Adults: Results from The Irish Longitudinal Study on Ageing, *The Journals of Gerontology: Series A*, Volume 78, Issue 4, April 2023, Pages 673–682, <https://doi.org/10.1093/gerona/glac156>
- O'Halloran, A.M., Cremers, J., Vrangbæk, K. et al. Cardiovascular disease and the risk of incident falls and mortality among adults aged ≥ 65 years presenting to the emergency department: a cohort study from national registry data in Denmark. *BMC Geriatr* 24, 93 (2024). <https://doi.org/10.1186/s12877-023-04618-2>
- Juraschek S, Cortez M, Flack JM, Ghazi L, Kenny RA, Rahman M, et al Orthostatic Hypotension in Adults With Hypertension: A Scientific Statement From the American Heart Association Hypertension. 2024;81:e16–e3