

Primary care assessment of Transient Loss of Consciousness in adults

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Introduction

Transient loss of consciousness (TLoC) affects up to half the population at some point in their lives.¹ Vasovagal syncope is the most common cause with a global prevalence of at least 16%, but TLoC may also be the first presentation of a serious underlying pathology.² Identifying individuals who require further investigation and evaluation is a challenging but important role of primary care clinicians. The National Institute for Health and Care Excellence (NICE) updated its TLoC guidelines in November 2023.³ Here, we summarise key aspects in differentiating causes of TLoC, outline the recommended approach to assessment and referral, and provide an overview of the relevant Driver and Vehicle Licensing Agency (DVLA) rules.

Initial assessment

First, try to establish whether a patient truly lost consciousness. A collateral history from a witness is often vitally important to understand features of the event and duration of syncope. It may be necessary to ask patients if you can ring friends and family to obtain this information. If an event was unwitnessed, suspect TLoC where a patient has a memory gap around a fall. When in doubt, assume the patient had TLoC until proven otherwise.

The next step is to categorise TLoC as being potentially due to trauma, syncope, or a non-syncope cause (Figure 1) based on a thorough history of the events leading up to, during and after the loss of consciousness.⁴ Syncope is defined as an episode of ‘cerebral hypoperfusion, characterized by a rapid onset, short duration and spontaneous complete recovery’.⁴ Other important information to help risk stratify the event include previous episodes of TLoC, personal and family history of cardiac or neurological disease, and a medication review.

Non-syncope TLoC

There are numerous causes of non-syncopal TLoC, including hypoglycaemia, intoxication, seizures or psychogenic causes. Non-syncopal causes may be suspected from the history, such as illicit drug and alcohol exposure or TLoC in a patient with insulin-dependent diabetes. People with seizures may experience an aura prior to TLoC, such as an unpleasant smell or taste. A case series study of 671 patients with TLoC reported that symptoms with a likelihood ratio >2.0 for predicting seizures rather than syncope included tongue biting, incontinence, post-ictal confusion, headaches and convulsive movements.⁵

Categorisation of syncope

Suspect syncope where trauma and non-syncopal causes seem unlikely. Syncope can be sub-categorised into neurally-mediated (including vasovagal), orthostatic or cardiac causes (see Table 1). The '3 P's' of posture, provocation, and prodrome can help differentiate between these and identify people who are likely to have had an uncomplicated episode of vasovagal syncope.

Vasovagal syncope typically occurs when standing, though can be when sitting or lying if there is a strong provoking factor, such as fear, sleep deprivation or heat. Patients may experience prodromal symptoms such as their vision closing in, light-headedness or a rising sensation in the abdomen. Syncope that occurs with a clear prodrome and provoking factor, e.g. fear, is likely to be vasovagal.

Orthostatic syncope is characterised by the relationship to changes in posture. Consider reflex syncope if there was a specific trigger, such as coughing or micturition. Carotid sinus hypersensitivity should be considered if the patient rotated their head immediately before the TLoC or were wearing tight clothing around the neck. The same case series of TLoC patients reported symptoms that were predictive of cardiac syncope included chest pain, palpitations, breathlessness, prior cardiac history and prolonged sitting or standing.⁵ Lack of prodrome and significant injury also point towards possible cardiac syncope.

A suspected diagnosis from the history can help guide the examination, such as assessing for a heart murmur, irregular pulse or signs of heart failure. Lying and standing blood pressure (BP) is indicated if the history suggests orthostatic hypotension or where the diagnosis is uncertain. NICE explicitly recommend lying and standing BP with repeated BP measures over 1 to 3 minutes of standing, but recognise sitting to standing blood pressure may be done for practical reasons.³ A drop in systolic blood pressure greater than 20mmHg after 1 minute of standing is considered significant.⁶

Further investigations

An ECG should be performed in all patients. NICE recommend the following ECG changes are considered red flags; any conduction abnormality, including any degree of heart block, right or left bundle branch block, any ST segment or T wave abnormalities and significant changes to the QT interval.³ This is not an exhaustive list and it is also important to compare the recent ECG to previous ones if available, as some of these changes can be longstanding normal variants, such as right bundle branch block.

Blood tests are often not required but may be considered depending on the history including blood glucose, haemoglobin, electrolytes, thyroid function and NT-pro-BNP.

Some primary care clinicians may have direct access to extended cardiac monitors or echocardiogram, which may be helpful to further investigate suspected cardiac syncope. However, it is important to recognise the potential limitations of these tests and NICE recommend all patients with suspected cardiac or neurological syncope based on the history, examination and ECG should be referred to secondary care.

Primary care management and referral

Vasovagal, reflex or orthostatic syncope can usually be diagnosed after the initial assessment and primary care investigations without the need for onward referral. Provide safety netting advice, safety advice on how to avoid repeat episodes and driving recommendation (see below). For patients with orthostatic hypotension the mechanisms behind their syncope should be explained, medications reviewed, and potential treatment options discussed, if appropriate.

Patient with features that suggest seizure, should be urgently referred to a specialist first seizure clinic. When a cardiogenic cause is suspected certain red flag symptoms indicate an admission or urgent referral is required. These include: ECG abnormalities, heart failure, TLoC during exertion, family history of sudden cardiac death, a murmur, and/or new breathlessness. An urgent referral can also be considered for those aged 65 or older with TLoC without prodromal symptoms. Consider discussing patients with the on-call medical team where there is uncertainty and high clinical concern.

DVLA advice

Another critical role for clinicians is to give patients correct advice regarding driving. Road traffic collisions resulting from blackouts are 2-3 times more common than those resulting from seizures.⁷

There are two particularly important considerations in regard to TLoC and road safety. The first is whether the patient had a reliable prodrome that would be of sufficient time to allow them to safely stop the vehicle during a repeat event. The second is posture, and particular attention should be given if TLoC occurred while sitting.

Group 2 bus and lorry drivers must stop driving and notify the DVLA following any episode of TLoC, even if it was typical for vasovagal syncope. Group 1 car and motorcycle drivers who have typical vasovagal syncope or recurrent syncope with an avoidable trigger can continue to drive without notifying the DVLA, providing this happens when standing. If there is no reliable prodrome, unexplained syncope, cough syncope, a cardiovascular cause is suspected, or there is clinical suspicion of seizure then the patient must not drive and should notify the DVLA. DVLA guidance is continuously under review and these guidelines are likely to be revised in the next 12 months. It is therefore sensible to recheck the recommendations before providing individual patient advice.

Conclusion

TLoC is common and it is important that primary care physicians can accurately distinguish between benign causes and those that require further, urgent investigations and referral. Two-thirds of cases can be diagnosed on the basis of a history, examination and ECG alone, with vasovagal syncope the most common cause. However, patients with a family history of sudden cardiac death, ECG abnormalities, suspected underlying heart disease, or where syncope occurs during exercise should be considered for urgent referral for suspected cardiac syncope. Anyone with a first seizure should also be urgently referred.

Take home Points

- Transient loss of consciousness is very common, affecting nearly half the population at some point. While it is often benign it is important to categorise the TLoC to help guide further investigations and management.
- Red flag symptoms include new breathlessness, TLoC during exertion, murmur, abnormal ECG findings and a family history of sudden death and should prompt referral to secondary care.
- It is important to remember to check DVLA guidance and provide patients with the correct driving advice following an episode of TLoC.

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Conflicts of Interest

TR is Associate Editor for the BJGP. NJ is a writer for RCGP Essential Knowledge Updates (EKU) e-learning and wrote the ECU 2024.2 module on transient loss of consciousness. TR is clinical lead for the ECU programme. KR is a Member of the Secretary of State for Transport's Honorary Medical Advisory Panel on driving and disorders of the cardiovascular system (specialising in Electrophysiology).

Table 1. Categorisation of syncope based on typical signs and symptoms

Category of Syncope	Mechanism	Conditions/events	Typical signs and symptoms
Cardiogenic	Arrhythmias	<u>Bradycardia</u> – Sinus bradycardia, atrioventricular block <u>Tachycardia</u> – ventricular or supraventricular tachycardia, Brugada syndrome, Long QT syndrome etc.	Syncope with little or no prodrome. Palpitations and dizziness. Palpitations prior to syncope.
	Structural	Aortic stenosis, myocardial infarction, hypertrophic cardiomyopathy	Syncope during exercise
	Cardio-pulmonary	Pulmonary embolism, Pulmonary hypertension. Aortic dissection	Syncope during exercise New breathlessness
Neurologic	Vasovagal	Known trigger – pain, prolonged standing etc.	Features of uncomplicated syncope - Three Ps
	Situational	Syncope following specific stimulus e.g. coughing, micturition, defecation, vomiting etc.	
	Carotid sinus	Syncope following carotid artery pressure e.g. after head turning	
Orthostatic	Drug induced	Starting new medication e.g. diuretics and vasodilators	Syncope while or immediately after standing often after sitting or supine for a long period.
	Volume depletion	Following dehydration, vomiting, diarrhoea	
	Autonomic	Parkinson's disease, spinal injury, diabetic autonomic neuropathy	

Figure 1. A flow diagram outlining the initial approach to the categorisation and assessment of transient loss of consciousness

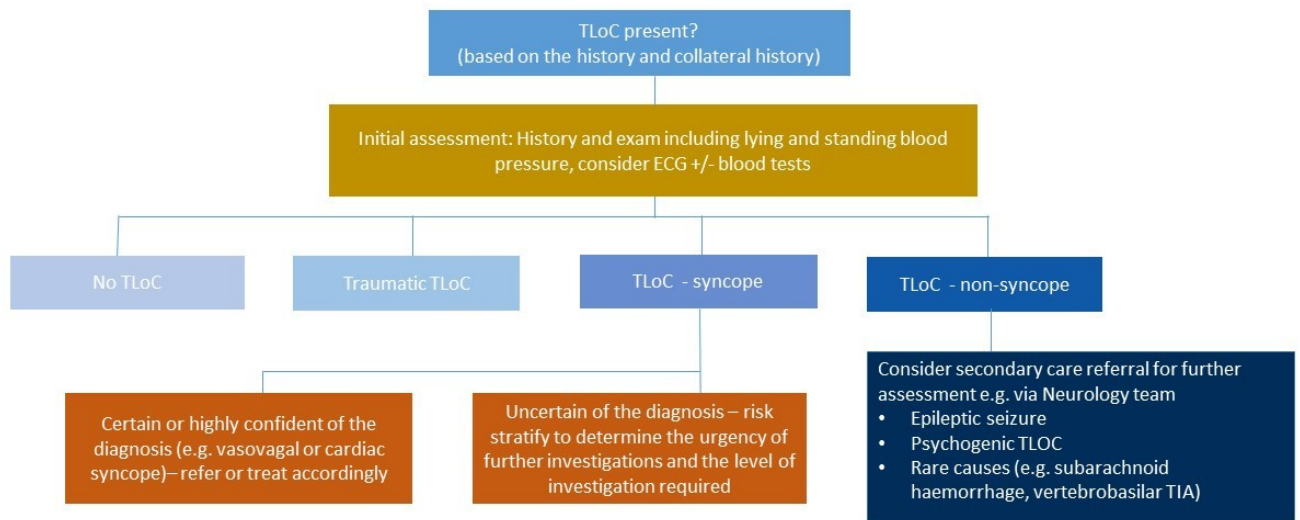


Figure adapted from the 2018 European Society of Cardiology Guidelines for the diagnosis and management of syncope.
 Michele Brignole, Angel Moya, Frederik J de Lange et al. 2018 ESC Guidelines for the diagnosis and management of syncope, *European Heart Journal*, Volume 39, Issue 21, 01 June 2018, Pages 1883–1948, <https://doi.org/10.1093/eurheartj/ehy037>

References

1. Colman N, Nahm K, Ganzeboom KS, et al. Epidemiology of reflex syncope. *Clin Auton Res*. Oct 2004;14 Suppl 1:9-17. doi:10.1007/s10286-004-1003-3
2. Salari N, Karimi Z, Hemmati M, Mohammadi A, Shohaimi S, Mohammadi M. Global prevalence of vasovagal syncope: A systematic review and meta-analysis. *Glob Epidemiol*. Jun 2024;7:100136. doi:10.1016/j.gloepi.2024.100136
3. NICE. *Transient loss of consciousness ('blackouts') in over 16s*. 2023. <https://www.nice.org.uk/guidance/cg109>
4. Brignole M, Moya A, de Lange FJ, et al. 2018 ESC Guidelines for the diagnosis and management of syncope. *Eur Heart J*. Jun 1 2018;39(21):1883-1948. doi:10.1093/eurheartj/ehy037
5. Sheldon R, Rose S, Ritchie D, et al. Historical criteria that distinguish syncope from seizures. *J Am Coll Cardiol*. Jul 3 2002;40(1):142-8. doi:10.1016/s0735-1097(02)01940-x
6. Shantsila E, Clark C. How to measure blood pressure: focus on general practice. *Br J Gen Pract*. Mar 2024;74(740):140-142. doi:10.3399/bjgp24X736689
7. Assessing fitness to drive – a guide for medical professionals (Gov.UK) (2024).