



*National Institute for  
Health and Clinical Excellence*

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# **Transient loss of consciousness (‘blackouts’) management in adults and young people**

## **NICE clinical guideline 109**

### **Transient loss of consciousness ('blackouts') management in adults and young people**

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## Introduction

This guideline is about the assessment, diagnosis and specialist referral of adults and young people (aged 16 and older) who have experienced a blackout (the medical term for this is ‘transient loss of consciousness’ or TLoC for short).

TLoC is very common: it affects up to half the population in the UK at some point in their lives. TLoC may be defined as spontaneous loss of consciousness with complete recovery. In this context, complete recovery would involve full recovery of consciousness without any residual neurological deficit. An episode of TLoC is often described as a ‘blackout’ or a ‘collapse’, but some people collapse without TLoC and this guideline does not cover that situation. There are various causes of TLoC, including cardiovascular disorders (which are the most common), neurological conditions such as epilepsy, and psychogenic attacks.

The diagnosis of the underlying cause of TLoC is often inaccurate, inefficient and delayed. There is huge variation in the management of TLoC. A substantial proportion of people initially diagnosed with, and treated for, epilepsy have a cardiovascular cause for their TLoC. Some people have expensive and inappropriate tests or inappropriate specialist referral (unnecessary referral or referral to the wrong specialty); others with potentially dangerous conditions may not receive appropriate assessment, diagnosis and treatment.

There is some existing NICE guidance that relates to TLoC, including that on epilepsy<sup>1</sup>, falls<sup>2</sup>, dual chamber pacemakers<sup>3</sup> and implantable cardioverter defibrillators<sup>4</sup>. Although related guidance on conditions that may contribute to TLoC exist (particularly chapter 8 of the ‘National service framework for

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<sup>1</sup> The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care (NICE clinical guideline 20).

<sup>2</sup> Falls: the assessment and prevention of falls in older people (NICE clinical guideline 21).

<sup>3</sup> Bradycardia – dual chamber pacemakers (NICE technology appraisal guidance 88).

<sup>4</sup> Arrhythmia – implantable cardioverter defibrillators (ICDs) (review) (NICE technology appraisal guidance 95).

coronary heart disease'<sup>5</sup>, and the European Society of Cardiology guidelines on syncope<sup>6</sup>), there is no NICE guidance that addresses the crucial aspects of initial assessment, diagnosis and specialist referral of people who have had TLoC. People experiencing TLoC may come under the care of a range of clinicians, and the lack of a clear pathway may contribute to misdiagnosis and inappropriate treatment.

In considering the assessment and treatment of people who have experienced TLoC, it is important to distinguish terms that describe the circumstances or nature of the episode from those that define the mechanism for loss of consciousness. Descriptive terms tend to guide further aspects of assessment, whereas the mechanism of TLoC will determine treatment. For example, 'exercise-induced syncope' describes the circumstances in which TLoC has occurred but does not indicate whether it was due to the mechanical effect of structural heart disease (such as severe aortic stenosis requiring valve surgery), a cardiac arrhythmia complicating structural heart disease (requiring treatment of the structural heart disease and of the arrhythmia), or a cardiac arrhythmia that requires treatment but is either not associated with any other heart disease or is associated with other heart disease that does not in itself require treatment. Furthermore, syncope that is exercise-induced but occurs shortly after stopping exercise rather than during exercise is most likely to be vasovagal in origin. The appropriate choice of investigation will be determined by the fact that TLoC was exercise-induced and by findings from the initial clinical assessment and electrocardiogram (ECG). The mechanism for TLoC established by these investigations will determine what treatment may be needed.

Clinical reasoning forms an important part of the process of ensuring that people who experience TLoC receive assessment, advice and treatment that is appropriate for each individual. Determination of the mechanism for TLoC in

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<sup>5</sup> National service framework for coronary heart disease, available at [www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4094275](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094275)

<sup>6</sup> European Society of Cardiology guidelines on syncope, available at [www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-syncope-FT.pdf](http://www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-syncope-FT.pdf)

an individual requires collection of evidence (from a detailed history, from clinical assessment and from appropriate investigations), and interpretation of each piece of evidence in overall clinical context. For example, in one person a piece of evidence such as witnessed seizure activity and/or urinary incontinence may point to a diagnosis of epilepsy, but in another may be entirely consistent with 'convulsive syncope', where other features of the episode indicate clearly that it was an episode of vasovagal syncope.

This guideline aims to define the appropriate pathways for the initial assessment, diagnosis and specialist referral of people who have had TLoC, so that they receive the correct diagnosis quickly, efficiently and cost effectively, leading to a suitable management plan. The approach of the Guideline Development Group was to produce a guideline in the form of an algorithm, pointing clinicians and patients towards those areas where guidance already exists (such as the guidance on epilepsy [NICE clinical guideline 20]; an update to this guideline is expected in March 2011), and providing new guidance in other areas, namely for people with syncope.

## Patient-centred care

This guideline offers best practice advice on the care of adults and young people who have experienced transient loss of consciousness (TLoC).

Treatment and care should take into account patients' needs and preferences. People who have experienced TLoC should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health's advice on consent (available from [www.dh.gov.uk/consent](http://www.dh.gov.uk/consent)) and the code of practice that accompanies the Mental Capacity Act (summary available from [www.publicguardian.gov.uk](http://www.publicguardian.gov.uk)). In Wales, healthcare professionals should follow advice on consent from the Welsh Assembly Government (available from [www.wales.nhs.uk/consent](http://www.wales.nhs.uk/consent)).

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Families and carers should also be given the information and support they need.

Care of young people in transition between paediatric and adult services should be planned and managed according to the best practice guidance described in 'Transition: getting it right for young people' (available from [www.dh.gov.uk](http://www.dh.gov.uk)).

Adult and paediatric healthcare teams should work jointly to provide assessment and services to young people who have experienced TLoC.

Diagnosis and management should be reviewed throughout the transition process, and there should be clarity about who is the lead clinician to ensure continuity of care.



## Key priorities for implementation

The Guideline Development Group selects recommendations from the guideline that will have the maximum impact on patient care. These are called 'key priorities for implementation'. It is particularly apparent in this guideline, which is a diagnostic pathway, that these recommendations are taken out of context. Please refer to the full list of recommendations (see section 1) to see how these recommendations relate to others. The following recommendations have been identified as priorities for implementation.

### Initial assessment

- Ask the person who has had the suspected TLoC, and any witnesses, to describe what happened before, during and after the event. Try to contact by telephone witnesses who are not present. Record details about:
  - circumstances of the event
  - person's posture immediately before loss of consciousness
  - prodromal symptoms (such as sweating or feeling warm/hot)
  - appearance (for example, whether eyes were open or shut) and colour of the person during the event
  - presence or absence of movement during the event (for example, limb-jerking and its duration)
  - any tongue-biting (record whether the side or the tip of the tongue was bitten)
  - injury occurring during the event (record site and severity)
  - duration of the event (onset to regaining consciousness)
  - presence or absence of confusion during the recovery period
  - weakness down one side during the recovery period.

- Record a 12-lead electrocardiogram (ECG) using automated interpretation. Treat as a red flag (see recommendation 1.1.4.2) if any of the following abnormalities are reported on the ECG printout:
  - conduction abnormality (for example, complete right or left bundle branch block or any degree of heart block)
  - evidence of a long or short QT interval, **or**
  - any ST segment or T wave abnormalities.
  
- Record carefully the information obtained from all accounts of the TLoC. Include paramedic records with this information. Give copies of the ECG record and the patient report form to the receiving clinician when care is transferred, and to the person who had the TLoC.
  
- Refer within 24 hours for specialist cardiovascular assessment by the most appropriate local service, anyone with TLoC who also has any of the following.
  - An ECG abnormality (see recommendations 1.1.2.2 and 1.1.2.3).
  - Heart failure (history or physical signs).
  - TLoC during exertion.
  - Family history of sudden cardiac death in people aged younger than 40 years and/or an inherited cardiac condition.
  - New or unexplained breathlessness.
  - A heart murmur.

Consider referring within 24 hours for cardiovascular assessment, as above, anyone aged older than 65 years who has experienced TLoC without prodromal symptoms.

- Diagnose uncomplicated faint (uncomplicated vasovagal syncope) on the basis of the initial assessment when:
  - there are no features that suggest an alternative diagnosis (note that brief seizure activity can occur during uncomplicated faints and is not necessarily diagnostic of epilepsy) **and**
  - there are features suggestive of uncomplicated faint (the 3 ‘P’s) such as:
    - ◇ **P**osture – prolonged standing, or similar episodes that have been prevented by lying down
    - ◇ **P**rovoking factors (such as pain or a medical procedure)
    - ◇ **P**rodromal symptoms (such as sweating or feeling warm/hot before TLoC).

### **Further assessment and referral**

- Refer people who present with one or more of the following features (that is, features that are strongly suggestive of epileptic seizures) for an assessment by a specialist in epilepsy; the person should be seen by the specialist within 2 weeks (see ‘The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care [NICE clinical guideline 20]).
  - A bitten tongue.
  - Head-turning to one side during TLoC.
  - No memory of abnormal behaviour that was witnessed before, during or after TLoC by someone else.
  - Unusual posturing.
  - Prolonged limb-jerking (note that brief seizure-like activity can often occur during uncomplicated faints).
  - Confusion following the event.
  - Prodromal déjà vu, or jamais vu (see glossary, appendix C).

Consider that the episode may not be related to epilepsy if any of the following features are present.

- Prodromal symptoms that on other occasions have been abolished by sitting or lying down.

- Sweating before the episode.
- Prolonged standing that appeared to precipitate the TLoC.
- Pallor during the episode.

Do not routinely use electroencephalogram (EEG) in the investigation of TLoC (see ‘The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care’ [NICE clinical guideline 20]).

### **Specialist cardiovascular assessment and diagnosis**

- Carry out a specialist cardiovascular assessment as follows.
  - Reassess the person’s:
    - ◇ detailed history of TLoC including any previous events
    - ◇ medical history and any family history of cardiac disease or an inherited cardiac condition
    - ◇ drug therapy at the time of TLoC and any subsequent changes.
  - Conduct a clinical examination, including full cardiovascular examination and, if clinically appropriate, measurement of lying and standing blood pressure.
  - Repeat 12-lead ECG and obtain and examine previous ECG recordings.

On the basis of this assessment, assign the person to one of the following suspected causes of syncope.

- Suspected structural heart disease.
- Suspected cardiac arrhythmic.
- Suspected neurally mediated.
- Unexplained.

Offer further testing as directed by recommendations 1.3.2.1 to 1.3.2.10 or other tests as clinically appropriate.

- For people with a suspected cardiac arrhythmic cause of syncope, offer an ambulatory ECG and do not offer a tilt test as a first-line investigation. The type of ambulatory ECG offered should be chosen on the basis of the person's history (and, in particular, frequency) of TLoC. For people who have:
  - TLoC at least several times a week, offer Holter monitoring (up to 48 hours if necessary). If no further TLoC occurs during the monitoring period, offer an external event recorder that provides continuous recording with the facility for the patient to indicate when a symptomatic event has occurred.
  - TLoC every 1–2 weeks, offer an external event recorder. If the person experiences further TLoC outside the period of external event recording, offer an implantable event recorder.
  - TLoC infrequently (less than once every 2 weeks), offer an implantable event recorder. A Holter monitor should not usually be offered unless there is evidence of a conduction abnormality on the 12-lead ECG.
- Do not offer a tilt test to people who have a diagnosis of vasovagal syncope on initial assessment.
- For all people with unexplained syncope (including after negative carotid sinus massage test in those for whom this is appropriate), offer ambulatory ECG (see recommendation 1.3.2.4). Do not offer a tilt test before the ambulatory ECG.

# 1 Guidance

The following guidance is based on the best available evidence. The full guideline ([www.nice.org.uk/guidance/CG109/FullGuidance](http://www.nice.org.uk/guidance/CG109/FullGuidance)) gives details of the methods and the evidence used to develop the guidance.

This guidance refers to different types of syncope. Please refer to the glossary (appendix C) for definitions of terms used in this guideline.

## 1.1 *Initial assessment*

### 1.1.1 **Gathering information about the event and initial decision-making**

1.1.1.1 If the person with suspected transient loss of consciousness (TLoC) has sustained an injury or they have not made a full recovery of consciousness, use clinical judgement to determine appropriate management and the urgency of treatment.

1.1.1.2 Ask the person who has had the suspected TLoC, and any witnesses, to describe what happened before, during and after the event. Try to contact by telephone witnesses who are not present. Record details about:

- circumstances of the event
- person's posture immediately before loss of consciousness
- prodromal symptoms (such as sweating or feeling warm/hot)
- appearance (for example, whether eyes were open or shut) and colour of the person during the event
- presence or absence of movement during the event (for example, limb-jerking and its duration)
- any tongue-biting (record whether the side or the tip of the tongue was bitten)
- injury occurring during the event (record site and severity)
- duration of the event (onset to regaining consciousness)

- presence or absence of confusion during the recovery period
- weakness down one side during the recovery period.

1.1.1.3 When recording a description of the suspected TLoC from the patient or a witness, take care to ensure that their communication and other needs are taken into account. This is particularly important when communicating with a child or young person, or person with special communication needs.

### **Determining whether the person had TLoC**

1.1.1.4 Use information gathered from all accounts of the suspected TLoC (see recommendation 1.1.1.2) to confirm whether or not TLoC has occurred. If this is uncertain it should be assumed that they had TLoC until proven otherwise. But, if the person did not have TLoC, instigate suitable management (for example, if the person is determined to have had a fall, rather than TLoC, refer to 'Falls: the assessment and prevention of falls in older people' [NICE clinical guideline 21]).

## **1.1.2 Obtaining patient history, physical examination and tests**

1.1.2.1 Assess and record:

- details of any previous TLoC, including number and frequency
- the person's medical history and any family history of cardiac disease (for example, personal history of heart disease and family history of sudden cardiac death)
- current medication that may have contributed to TLoC (for example, diuretics)
- vital signs (for example, pulse rate, respiratory rate and temperature) – repeat if clinically indicated
- lying and standing blood pressure if clinically appropriate
- other cardiovascular and neurological signs.

- 1.1.2.2 Record a 12-lead electrocardiogram (ECG) using automated interpretation. Treat as a red flag (see recommendation 1.1.4.2) if any of the following abnormalities are reported on the ECG printout:
- conduction abnormality (for example, complete right or left bundle branch block or any degree of heart block)
  - evidence of a long or short QT interval, **or**
  - any ST segment or T wave abnormalities.
- 1.1.2.3 If a 12-lead ECG with automated interpretation is not available, take a manual 12-lead ECG reading and have this reviewed by a healthcare professional trained and competent in identifying the following abnormalities.
- Inappropriate persistent bradycardia.
  - Any ventricular arrhythmia (including ventricular ectopic beats).
  - Long QT (corrected QT > 450 ms) and short QT (corrected QT < 350 ms) intervals.
  - Brugada syndrome.
  - Ventricular pre-excitation (part of Wolff-Parkinson-White syndrome).
  - Left or right ventricular hypertrophy.
  - Abnormal T wave inversion.
  - Pathological Q waves.
  - Atrial arrhythmia (sustained).
  - Paced rhythm.
- 1.1.2.4 If during the initial assessment, there is suspicion of an underlying problem causing TLoC, or additional to TLoC, carry out **relevant** examinations and investigations (for example, check blood glucose levels if diabetic hypoglycaemia is suspected, or haemoglobin levels if anaemia or bleeding is suspected; see also recommendation 1.2.2.1 for information about the use of electroencephalogram [EEG]).



### **1.1.3 Recording the event information and transfer of records**

1.1.3.1 Record carefully the information obtained from all accounts of the TLoC. Include paramedic records with this information. Give copies of the ECG record and the patient report form to the receiving clinician when care is transferred, and to the person who had the TLoC.

### **1.1.4 Making a judgement based on initial assessment**

#### **Red flags: people requiring urgent assessment and treatment**

1.1.4.1 If TLoC is secondary to a condition that requires immediate action, use clinical judgement to determine appropriate management and the urgency of treatment.

1.1.4.2 Refer within 24 hours for specialist cardiovascular assessment by the most appropriate local service, anyone with TLoC who also has any of the following.

- An ECG abnormality (see recommendations 1.1.2.2 and 1.1.2.3).
- Heart failure (history or physical signs).
- TLoC during exertion.
- Family history of sudden cardiac death in people aged younger than 40 years and/or an inherited cardiac condition.
- New or unexplained breathlessness.
- A heart murmur.

Consider referring within 24 hours for cardiovascular assessment, as above, anyone aged older than 65 years who has experienced TLoC without prodromal symptoms.

## **No further immediate management required**

1.1.4.3 Diagnose uncomplicated faint (uncomplicated vasovagal syncope) on the basis of the initial assessment when:

- there are no features that suggest an alternative diagnosis (note that brief seizure activity can occur during uncomplicated faints and is not necessarily diagnostic of epilepsy) **and**
- there are features suggestive of uncomplicated faint (the 3 'P's) such as:
  - **P**osture – prolonged standing, or similar episodes that have been prevented by lying down
  - **P**rovoking factors (such as pain or a medical procedure)
  - **P**rodromal symptoms (such as sweating or feeling warm/hot before TLoC).

1.1.4.4 Diagnose situational syncope on the basis of the initial assessment when:

- there are no features from the initial assessment that suggest an alternative diagnosis **and**
- syncope is clearly and consistently provoked by straining during micturition (usually while standing) or by coughing or swallowing.

1.1.4.5 If a diagnosis of uncomplicated faint or situational syncope is made, and there is nothing in the initial assessment to raise clinical or social concern, no further immediate management is required. If the presentation is not to the GP, the healthcare professional should:

- advise the person to take a copy of the patient report form and the ECG record to their GP
- inform the GP about the diagnosis, directly if possible; if an ECG has not been recorded, the GP should arrange an ECG (and its interpretation as described in recommendation 1.1.2.3) within 3 days.

## **Further immediate management required**

- 1.1.4.6 If the person presents to the ambulance service, take them to the Emergency Department unless a diagnosis of an uncomplicated faint or situational syncope is clear.

## **1.2 Further assessment and referral**

### **1.2.1 Suspected orthostatic hypotension**

- 1.2.1.1 Suspect orthostatic hypotension on the basis of the initial assessment when:

- there are no features suggesting an alternative diagnosis **and**
- the history is typical.

If these criteria are met, measure lying and standing blood pressure (with repeated measurements while standing for 3 minutes). If clinical measurements do not confirm orthostatic hypotension despite a suggestive history, refer the person for further specialist cardiovascular assessment.

If orthostatic hypotension is confirmed, consider likely causes, including drug therapy, and manage appropriately (for example, see 'Falls: the assessment and prevention of falls in older people' [NICE clinical guideline 21]).

### **1.2.2 Suspected epilepsy**

- 1.2.2.1 Refer people who present with one or more of the following features (that is, features that are strongly suggestive of epileptic seizures) for an assessment by a specialist in epilepsy; the person should be seen by the specialist within 2 weeks (see 'The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care [NICE clinical guideline 20]).

- A bitten tongue.
- Head-turning to one side during TLoC.

- No memory of abnormal behaviour that was witnessed before, during or after TLoC by someone else.
- Unusual posturing.
- Prolonged limb-jerking (note that brief seizure-like activity can often occur during uncomplicated faints).
- Confusion following the event.
- Prodromal déjà vu, or jamais vu (see glossary, appendix C).

Consider that the episode may not be related to epilepsy if any of the following features are present.

- Prodromal symptoms that on other occasions have been abolished by sitting or lying down.
- Sweating before the episode.
- Prolonged standing that appeared to precipitate the TLoC.
- Pallor during the episode.

Do not routinely use EEG in the investigation of TLoC (see 'The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care' [NICE clinical guideline 20]).

### **1.2.3 Referral for specialist cardiovascular assessment**

1.2.3.1 Refer all people with TLoC (apart from the exceptions below) for a specialist cardiovascular assessment by the most appropriate local service. Exceptions are:

- people with a firm diagnosis, after the initial assessment, of:
  - uncomplicated faint
  - situational syncope
  - orthostatic hypotension
- people whose presentation is strongly suggestive of epileptic seizures.

## **1.3 Specialist cardiovascular assessment and diagnosis**

### **1.3.1 Assessment and assignment to type of syncope**

1.3.1.1 Carry out a specialist cardiovascular assessment as follows.

- Reassess the person's:
  - detailed history of TLoC including any previous events
  - medical history and any family history of cardiac disease or an inherited cardiac condition
  - drug therapy at the time of TLoC and any subsequent changes.
- Conduct a clinical examination, including full cardiovascular examination and, if clinically appropriate, measurement of lying and standing blood pressure.
- Repeat 12-lead ECG and obtain and examine previous ECG recordings.

On the basis of this assessment, assign the person to one of the following suspected causes of syncope.

- Suspected structural heart disease.
- Suspected cardiac arrhythmic.
- Suspected neurally mediated.
- Unexplained.

Offer further testing as directed by recommendations 1.3.2.1 to 1.3.2.10 or other tests as clinically appropriate.

1.3.1.2 For people with suspected structural heart disease, investigate appropriately (for example, cardiac imaging). Because other mechanisms for syncope are possible in this group, also consider investigating for a cardiac arrhythmic cause (as described in recommendation 1.3.2.4), and for orthostatic hypotension (often caused/exacerbated by drug therapy – see

recommendation 1.2.1.1) or for neurally mediated syncope (see recommendations 1.3.2.5 and 1.3.2.6).

### **1.3.2 Diagnostic tests for different types of syncope**

- 1.3.2.1 Use the person's history to distinguish people whose exercise-induced syncope occurred **during exercise** (when a cardiac arrhythmic cause is probable) from those whose syncope occurred **shortly after stopping exercise** (when a vasovagal cause is more likely).
- 1.3.2.2 For people who have experienced syncope **during exercise**, offer urgent (within 7 days) exercise testing, unless there is a possible contraindication (such as suspected aortic stenosis or hypertrophic cardiomyopathy requiring initial assessment by imaging). Advise the person to refrain from exercise until informed otherwise following further assessment.
- 1.3.2.3 If the mechanism for exercise-induced syncope is identified by exercise testing, carry out further investigation or treatment as appropriate in each individual clinical context. Otherwise, carry out further investigations assuming a suspected cardiac arrhythmic cause.
- 1.3.2.4 For people with a suspected cardiac arrhythmic cause of syncope, offer an ambulatory ECG and do not offer a tilt test as a first-line investigation. The type of ambulatory ECG offered should be chosen on the basis of the person's history (and, in particular, frequency) of TLoC. For people who have:
- TLoC at least several times a week, offer Holter monitoring (up to 48 hours if necessary). If no further TLoC occurs during the monitoring period, offer an external event recorder that provides continuous recording with the facility for the patient to indicate when a symptomatic event has occurred.

- TLoC every 1–2 weeks, offer an external event recorder. If the person experiences further TLoC outside the period of external event recording, offer an implantable event recorder.
  - TLoC infrequently (less than once every 2 weeks), offer an implantable event recorder. A Holter monitor should not usually be offered unless there is evidence of a conduction abnormality on the 12-lead ECG.
- 1.3.2.5 Do not offer a tilt test to people who have a diagnosis of vasovagal syncope on initial assessment.
- 1.3.2.6 For people with suspected vasovagal syncope with recurrent episodes of TLoC adversely affecting their quality of life, or representing a high risk of injury, consider a tilt test only to assess whether the syncope is accompanied by a severe cardioinhibitory response (usually asystole).
- 1.3.2.7 For people with suspected carotid sinus syncope and for people with unexplained syncope who are aged 60 years or older, offer carotid sinus massage as a first-line investigation. This should be conducted in a controlled environment, with ECG recording, and with resuscitation equipment available.
- 1.3.2.8 Diagnose carotid sinus syncope if carotid sinus massage reproduces syncope due to marked bradycardia/asystole and/or marked hypotension. Do not diagnose carotid sinus syncope if carotid sinus massage causes asymptomatic transient bradycardia or hypotension (see recommendation 1.3.2.9).
- 1.3.2.9 For all people with unexplained syncope (including after negative carotid sinus massage test in those for whom this is appropriate), offer ambulatory ECG (see recommendation 1.3.2.4). Do not offer a tilt test before the ambulatory ECG.

- 1.3.2.10 When offering a person an implantable event recorder, provide one that has both patient-activated and automatic detection modes. Instruct the person and their family and/or carer how to operate the device. Advise the person that they should have prompt<sup>7</sup> follow-up (data interrogation of the device) after they have any further TLoC.

#### **1.4 *If the cause of TLoC remains uncertain***

- 1.4.1.1 If a person has persistent TLoC, consider psychogenic non-epileptic seizures (PNES) or psychogenic pseudosyncope if, for example:

- the nature of the events changes over time
- there are multiple unexplained physical symptoms
- there are unusually prolonged events.

The distinction between epilepsy and non-epileptic seizures is complex; therefore refer for neurological assessment if either PNES or psychogenic pseudosyncope is suspected.

- 1.4.1.2 Advise people who have experienced TLoC to try to record any future events (for example, a video recording or a detailed witness account of the event), particularly if the diagnosis is unclear or taking a history is difficult.
- 1.4.1.3 If after further assessment the cause of TLoC remains uncertain or the person has not responded to treatment, consider other causes including the possibility that more than one mechanism may co-exist (for example, ictal arrhythmias).

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<sup>7</sup> The timing of the follow-up is dependent on the storage on the device and the condition of the person.



## **1.5 Information for people with TLoC**

### **1.5.1 General information**

1.5.1.1 When communicating with the person who had TLoC, discuss the:

- possible causes of their TLoC
- benefits and risks of any tests they are offered
- results of tests they have had
- reasons for any further investigations they are offered
- nature and extent of uncertainty in the diagnosis.

### **1.5.2 Driving**

1.5.2.1 Give advice about eligibility to drive when a person first presents with TLoC<sup>8</sup>.

1.5.2.2 Advise all people who have experienced TLoC that they must not drive while waiting for a specialist assessment. Following specialist assessment, the healthcare professional should advise the person of their obligations regarding reporting the TLoC event to the Driver and Vehicle Licensing Agency (DVLA)<sup>8</sup>.

### **1.5.3 Health and safety at work**

1.5.3.1 Advise people who have experienced TLoC of the implications of their episode for health and safety at work and any action they must take to ensure the safety of themselves and that of other people<sup>9</sup>.

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<sup>8</sup> Please refer to the DVLA for further information at [www.dft.gov.uk/dvla/medical/medical\\_advisory\\_information/medicaladvisory\\_meetings/pmembers\\_nervous\\_system.aspx](http://www.dft.gov.uk/dvla/medical/medical_advisory_information/medicaladvisory_meetings/pmembers_nervous_system.aspx)

<sup>9</sup> Please refer to 'Health and Safety at Work etc Act 1974' available at [www.hse.gov.uk/legislation/hswa.htm](http://www.hse.gov.uk/legislation/hswa.htm)

## **1.5.4 Safety advice for people who have had TLoC**

1.5.4.1 For people with an uncomplicated faint (uncomplicated vasovagal syncope) or situational syncope:

- explain the mechanisms causing their syncope
- advise on possible trigger events, and strategies for avoiding them. If the trigger events are unclear, advise people to keep a record of their symptoms, when they occur and what they were doing at the time, in order to understand what causes them to faint
- reassure them that their prognosis is good
- advise them to consult their GP if they experience further TLoC, particularly if this differs from their recent episode.

1.5.4.2 For people with orthostatic hypotension:

- explain the mechanisms causing their syncope
- discuss and review possible causes, especially drug therapy
- discuss the prognostic implications and treatment options available
- advise people what to do if they experience another TLoC.

1.5.4.3 Advise people waiting for a specialist cardiovascular assessment:

- what they should do if they have another event
- if appropriate, how they should modify their activity (for example, by avoiding physical exertion if relevant) and not to drive<sup>10</sup>.

1.5.4.4 Offer advice to people waiting for specialist neurological assessment for their TLoC as recommended in 'The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care' (NICE clinical guideline 20).

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<sup>10</sup> Please refer to the DVLA for further information at [www.dft.gov.uk/dvla/medical/medical\\_advisory\\_information/medicaladvisory\\_meetings/pmembers\\_nervous\\_system.aspx](http://www.dft.gov.uk/dvla/medical/medical_advisory_information/medicaladvisory_meetings/pmembers_nervous_system.aspx)

## 2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from [www.nice.org.uk/guidance/CG109](http://www.nice.org.uk/guidance/CG109) – click on ‘How this guidance was produced’.

The recommendations in this guideline cover the assessment, diagnosis and specialist referral of adults and young people (aged 16 and older) who have experienced a blackout (transient loss of consciousness).

It does not specifically cover:

- children aged younger than 16 years
- people who have had a physical injury, such as head injury or major trauma, before experiencing a blackout
- people who have collapsed without loss of consciousness
- people who have experienced prolonged loss of consciousness without recovery, which may be described as a coma.

### **How this guideline was developed**

NICE commissioned the National Clinical Guideline Centre to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information about how NICE clinical guidelines are developed on the NICE website ([www.nice.org.uk/HowWeWork](http://www.nice.org.uk/HowWeWork)). A booklet, ‘How NICE clinical guidelines are developed: an overview for stakeholders, the public and the NHS’ (fourth edition, published 2009), is available from NICE publications (phone 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) and quote reference N1739).

### **3 Implementation**

NICE has developed tools to help organisations implement this guidance (see [www.nice.org.uk/guidance/CG109](http://www.nice.org.uk/guidance/CG109)).

### **4 Research recommendations**

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline (see section 5).

#### **4.1 *Development of a robust system for promoting good-quality information from a witnessed TLoC***

Does providing people who have experienced TLoC and their family/carers with information on the importance of witnessed accounts reduce the time to correct diagnosis and prevent inappropriate referrals?

##### **Why this is important**

Patient and witness accounts of TLoC are essential to a correct diagnosis. Information is an important part of the patient journey and central to the overall quality of each patient's experience of the NHS. Improving information for patients was a commitment in the NHS Plan (DH 2000) and more recently in Lord Darzi's review of the NHS, 'High quality care for all' (DH 2008). There is a need to improve and monitor the effectiveness of information provided across the NHS. Good-quality trials in people with TLoC are needed to establish whether providing specific information to people with TLoC and their carers helps healthcare professionals to reach a correct diagnosis more quickly, and improves outcomes for the patient. The information should address which details of a TLoC event are required to aid diagnosis. This would also identify those patients who have been inadvertently sent down the wrong TLoC pathway.

Such studies should consider a number of delivery mechanisms including advice-specific information leaflets or visual data (information given in pictorial form).

## **4.2 Investigation of the accuracy of automated ECG interpretation**

Does using automated ECG interpretation improve the accuracy of diagnosis in the TLoC population compared with expert interpretation, and what is the overall effect on patient outcomes, including patients with inherited long QT syndromes?

### **Why this is important**

The prevalence of syncope during the lifetime of a person living 70 years is estimated to be approximately 42%. The Framingham study<sup>11</sup> identified people with cardiac syncope to have a poorer prognosis than those with neurally mediated syncope or those in whom the cause of TLoC was uncertain. Risk-stratification studies undertaken in Emergency Departments in patients with TLoC have identified that an abnormal resting 12-lead ECG at presentation is a marker of high risk of death. A 12-lead ECG is cheap, widely available and can be performed quickly at the patient's bedside. In the past, all recorded ECGs were manually read and interpreted. The quality of interpretation depended on the skill of the interpreter. Most of the ECGs recorded today are digitally acquired and automatically read. Scientific studies have been undertaken to compare the accuracy of this automatic interpretation with expert interpretation in the general population. However, no published scientific studies are available in a population selected for TLoC. It is therefore recommended that studies be undertaken in adults who had TLoC to assess the accuracy of automatically interpreted ECGs versus those interpreted by experts in diagnosing the cause of TLoC, including in people with long QT syndrome.

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<sup>11</sup> Soteriades ES, Evans JC, Larson MG et al. (2002) Incidence and prognosis of syncope. *New England Journal of Medicine* 347: 878–85.

### **4.3 *Diagnostic yield of repeated ECG and physiological parameter recording***

Does a serial assessment approach (taking repeated ECGs or repeated observations of vital signs) improve diagnosis of high-risk cardiac arrhythmias when compared with a single assessment approach in people with TLoC in any setting?

#### **Why this is important**

Current consensus opinion suggests that a single assessment approach has the same diagnostic yield as serial assessments for high-risk cardiac arrhythmias in patients presenting with TLoC, despite there being little evidence to support this approach during the critical phase of a presentation. Variable length QTc and changes in T-wave morphology can occur with heart rates as low as 90 beats per minute and may be paroxysmal in nature. Undertaking a serial assessment approach may therefore be more sensitive in detecting QTc length variability for high-risk patients with potential long QT syndrome during initial presentations than a single recording of an ECG.

### **4.4 *Investigation of the benefit and cost effectiveness of 12-lead ECG***

In people who are considered on the basis of clinical history and examination to have had an uncomplicated faint, what is the additional clinical effectiveness and cost effectiveness of a 12-lead ECG?

#### **Why this is important**

Uncomplicated fainting is a very common cause of TLoC. It has a good prognosis and in most cases can be diagnosed accurately from the person's history and from observations made by witnesses or healthcare professionals, without the need for any tests. Most healthy people who faint have a normal ECG; in a few, ECG features of no importance may generate unnecessary concern and further tests.

Much less commonly, relatively rare heart conditions cause TLoC in otherwise healthy young people who are at risk of dying suddenly unless the condition is

recognised and treated. In many of these people, an abnormal ECG will provide evidence of the heart condition. Although TLoC in these conditions is not usually typical of an uncomplicated faint, the diagnosis has been missed in some people, with disastrous consequences.

It is important that research is conducted to establish whether:

- making a diagnosis of uncomplicated faint from typical clinical features and without an ECG will miss dangerous heart conditions that would have been identified if an ECG had been recorded
- it is cost effective to record ECGs in large numbers of people who have had an uncomplicated faint to try to avoid missing a more dangerous condition in a small number of people.

#### **4.5 *Cost effectiveness of implantable event recorders in people with TLoC***

Under what circumstances is the implantable cardiac event recorder the investigation of choice for TLoC in people in whom a cardiac cause is suspected?

##### **Why this is important**

This guideline recommends that people with a suspected cardiac cause of TLoC, who have infrequent episodes (every 1–2 weeks or less), should be offered an implantable cardiac event recorder. It is unclear when it would be more cost effective to use a strategy of alternative investigation (for example, external event recording).

## **5 Other versions of this guideline**

### **5.1 Full guideline**

The full guideline 'Transient loss of consciousness ('blackouts') management in adults and young people' contains details of the methods and evidence used to develop the guideline. It is published by the National Clinical Guideline Centre, and is available from [www.ncgc.ac.uk](http://www.ncgc.ac.uk) and our website ([www.nice.org.uk/guidance/CG109/FullGuidance](http://www.nice.org.uk/guidance/CG109/FullGuidance)).

### **5.2 Quick reference guide**

A quick reference guide for healthcare professionals is available from [www.nice.org.uk/guidance/CG109/QuickRefGuide](http://www.nice.org.uk/guidance/CG109/QuickRefGuide)

For printed copies, phone NICE publications on 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) (quote reference number N2270).

### **5.3 'Understanding NICE guidance'**

A summary for patients and carers ('Understanding NICE guidance') is available from [www.nice.org.uk/guidance/CG109/PublicInfo](http://www.nice.org.uk/guidance/CG109/PublicInfo)

For printed copies, phone NICE publications on 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) (quote reference number N2271).

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about transient loss of consciousness.



## 6 Related NICE guidance

### Published

- Unstable angina and NSTEMI. NICE clinical guideline 94 (2010). Available from [www.nice.org.uk/guidance/CG94](http://www.nice.org.uk/guidance/CG94)
- Stroke. NICE clinical guideline 68 (2008). Available from [www.nice.org.uk/guidance/CG68](http://www.nice.org.uk/guidance/CG68)
- Head injury. NICE clinical guideline 56 (2007). Available from [www.nice.org.uk/guidance/CG56](http://www.nice.org.uk/guidance/CG56)
- Anxiety (amended). NICE clinical guideline 22 (2007). Available from [www.nice.org.uk/guidance/CG22](http://www.nice.org.uk/guidance/CG22)
- Atrial fibrillation. NICE clinical guideline 36 (2006). Available from [www.nice.org.uk/guidance/CG36](http://www.nice.org.uk/guidance/CG36)
- Falls. NICE clinical guideline 21 (2004). Available from [www.nice.org.uk/guidance/CG21](http://www.nice.org.uk/guidance/CG21)
- The epilepsies. NICE clinical guideline 20 (2004). Available from [www.nice.org.uk/guidance/CG20](http://www.nice.org.uk/guidance/CG20)

### Under development

NICE is developing the following guidance (details available from [www.nice.org.uk](http://www.nice.org.uk)):

- The epilepsies (update). NICE clinical guideline. Publication expected March 2011.

## **7        Updating the guideline**

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.

## **Appendix A: The Guideline Development Group, National Clinical Guideline Centre and NICE project team**

### ***Guideline Development Group***

#### **Dr Paul Cooper (Chairman)**

Consultant Neurologist, Salford Royal Hospital (Hope Hospital)

#### **Dr Robin Beal**

Consultant in Emergency Medicine, St Mary's Hospital, Newport, Isle of Wight

#### **Dr Mary Braine**

Lecturer, School of Nursing & Midwifery, University of Salford

#### **Ms Julie Fear**

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#### **Ms Paddy Jelen**

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#### **Dr Fiona Jewkes (resigned June 2008)**

General Practitioner, Wiltshire

#### **Mr John Pawelec**

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#### **Dr David Pitcher**

Consultant Cardiologist, Worcestershire Royal Hospital

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General Practitioner with a Special Interest in Epilepsy (GPwSI) for Eastern and Coastal Kent Primary Care Trust

**Mr Garry Swann**

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***National Clinical Guideline Centre***

**Dr Ian Bullock (Guideline Lead)**

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**Ms Sarah Davis**

Health Economic Lead

**Mr Paul Miller**

Senior Information Scientist

**Ms Emma Nawrocki**

Project Co-ordinator

**Ms Nancy Turnbull**

Project Manager

**Dr Maggie Westby (Reviewer)**

Clinical Effectiveness Lead

***NICE project team***

**Philip Alderson**

Associate Director

**Susan Latchem**

Guideline Commissioning Manager (until January 2010)

**Sarah Dunsdon**

Guideline Commissioning Manager (from January 2010)

**Laura Bruton**

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**Judith Thornton**

Technical Lead

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Health Economist

**Michelle Wallwin**

Editor

## **Appendix B: The Guideline Review Panel**

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

### **Dr Peter Robb (Chair)**

Consultant ENT Surgeon, Surrey

### **Dr Aomesh Bhatt**

Director of Regulatory and Medical Affairs North Europe, Hull

### **Dr Christine Hine**

Consultant in public health, South Gloucestershire

### **Mr John Seddon**

Chairman, V.O.I.C.E.S, Bolton

## Appendix C: Glossary

NOTE: A fuller glossary of terms is given in the full guideline, available from [www.nice.org.uk/guidance/CG109/FullGuidance](http://www.nice.org.uk/guidance/CG109/FullGuidance). Please also refer to 'The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care' NICE clinical guideline 20 (2004), available from [www.nice.org.uk/guidance/CG20](http://www.nice.org.uk/guidance/CG20), for a more detailed glossary of terms related to epilepsy.

**12-lead ECG** Recording of the heart's electrical signals obtained by attaching electrodes in ten standard positions on the limbs and the surface of the chest. This provides a display of the electrical activity of the heart viewed from 12 different directions.

**Arrhythmia** An abnormal heart rhythm.

**Asystole** Sustained absence of the heart's electrical activity.

**Blackout** Sudden and spontaneous transient loss of consciousness with complete recovery. In this context, complete recovery would involve full recovery of consciousness without any residual neurological deficit.

**Bradycardia** Slow heart rate (irrespective of rhythm), conventionally defined as less than 60 beats per minute.

**Brugada syndrome** An inherited ion channel disorder characterised by abnormal ST segment elevation in leads V1 to V3 on ECG. This predisposes to ventricular arrhythmia and sudden cardiac death, and may present with syncope.

**Cardiac arrhythmic syncope** Syncope caused by a sudden abnormality of heart rhythm, which may be a bradyarrhythmia (abnormal rhythm with a slow heart rate) or a tachyarrhythmia (abnormal rhythm with a fast heart rate).

**Carotid sinus massage** A procedure in which the carotid sinus is stimulated (by firm massage with a thumb during continuous ECG and blood pressure

monitoring in both supine and upright positions) to investigate suspected or possible carotid sinus syncope.

**Carotid sinus syncope** A form of neurally mediated syncope in which pressure on one or other carotid artery causes syncope.

**Convulsive syncope** Loss of consciousness caused by transient insufficiency of blood supply to the brain accompanied by jerky or posturing movements, generally involving the limbs.

**Déjà vu** An intense sensation that what is happening for the first time has already occurred previously. This is common particularly in adolescence, but may be a manifestation of a partial seizure (rather than occurring immediately before an epileptic seizure).

**Emergency** Immediate action within 24 hours.

**Exercise-induced syncope** Syncope induced by exercise.

**External event recorder** A small portable recorder that is capable of monitoring and storing ECG recordings from electrodes on the skin. The device records the heart's rhythm during symptoms (including syncope) that occur intermittently. Excludes event recorders that do not perform continuous ECG monitoring (and therefore are not capable of documenting cardiac rhythm at the moment of TLoC).

**Faint** Episode of TLoC due to vasovagal syncope. Fainting is a temporary loss of consciousness due to a drop in blood flow to the brain. The episode is brief and is followed by rapid and complete recovery.

**Holter monitor/recorder** A small portable recorder that is capable of continuous ECG recording from electrodes on the skin, usually used over a 24- to 72-hour period.

**Ictal arrhythmia** A disturbance of normal heart rhythm occurring during a seizure.



**Implantable event recorder** Small implantable device capable of monitoring and storing ECG recordings of the heart's rhythm. It is also known as an implantable/insertable loop recorder.

**Jamais vu** A feeling of lack of familiarity, that what should be familiar is happening for the first time; it is usually abnormal, it doesn't commonly occur in healthy people.

**Long QT syndromes** Inherited conditions characterised by prolongation of a specific portion of the ECG. This predisposes to ventricular arrhythmia and sudden cardiac death, and may present with syncope.

**Micturition syncope** A form of neurally mediated syncope provoked by straining while passing urine while standing.

**Neurally mediated syncope** Sometimes called 'reflex syncope'. Transient loss of consciousness due to a reflex hypotensive response and/or reflex bradycardic response to a number of causes; this category includes vasovagal syncope, carotid sinus syncope, and situational syncope.

**Orthostatic hypotension** Condition in which a marked fall in blood pressure is provoked by a change in posture from lying to sitting, or from lying or sitting to standing. This may cause light-headedness (dizziness), a fall, or TLoC.

**Post-ictal confusion** An abnormal state that follows an attack, usually referring to a disturbed condition after an epileptic seizure.

**Pre-syncope** A sensation of impending fainting/loss of consciousness.

**Prodrome** Symptoms which precede the episode, usually considered to be more prominent than an aura, which is usually very brief.

**Pseudosyncope** A psychogenic non-epileptic attack characterised by loss of muscle tone and having the appearance of a faint.

**Psychogenic non-epileptic seizures (PNES)** Episodes of altered movement, sensation or experience, similar to epilepsy but caused by a

psychological process and not associated with abnormal electrical discharges in the brain.

**Red flags** For this guideline, the term 'red flags' indicates that the person is considered to be at high risk of a serious adverse event and should be referred for urgent specialist assessment.

**Short QT syndrome** Inherited condition characterised by a specific portion of the ECG being of abnormally short duration. This predisposes to ventricular arrhythmia and sudden cardiac death, and may present with syncope.

**Situational syncope** A form of neurally mediated syncope occurring in certain specific situations (for example, cough syncope, micturition syncope, or swallowing syncope).

**Specialist** A healthcare professional who has expert knowledge of, and skills in, a particular clinical area, especially one who is certified by a higher medical educational organisation.

**Structural heart disease** Any disease of the heart in which the structural components of the heart are abnormal. This encompasses heart muscle disease, valve disease and congenital heart disease.

**Tachycardia** Fast heart rate (irrespective of rhythm), conventionally defined as greater than 100 beats per minute.

**Tilt test** Test in which a patient is exposed to passive head-up tilt, during which they have beat-to-beat measurement of heart rate and blood pressure, to try to demonstrate whether or not they have a provokable tendency to vasovagal syncope.

**Transient loss of consciousness (TLoC)** Preferred term for a blackout.

**Vasovagal syncope** A form of neurally mediated syncope. This is often, but not always, triggered by circumstances such as pain, prolonged standing (especially in a warm environment), or emotional stress. This commonly

presents as an identifiable 'uncomplicated faint' but can present as sudden unprovoked syncope.

**Ventricular fibrillation** Chaotic electrical activity in the heart's ventricles, causing loss of pumping action and resulting in cardiac arrest. If not corrected immediately, this will lead to death.

**Ventricular tachycardia** Tachycardia arising from the heart's ventricular muscle. This can in some people cause syncope or cardiac arrest and sudden death.

## **Appendix D: The algorithms**

Please refer to the algorithms in the quick reference guide, available at

[www.nice.org.uk/guidance/CG109/QuickRefGuide](http://www.nice.org.uk/guidance/CG109/QuickRefGuide)