Syncope Management
(Diagnosis and Treatment of)

The Task Force on the Diagnosis and Treatment of Syncope Management of the European Society of Cardiology
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European Society of Cardiology
Task Force Report

Guidelines on Management (Diagnosis and Treatment) of Syncope – Update 2004

Executive summary: Brignole et al.
Eur Heart J 2004; 25: 2054

Full text: Brignole et al.
Europace 2004; 6: 467

Downloadable for free from www.escardio.org
Outline

- Objectives
- Background
- Classification, epidemiology and prognosis
- Diagnosis
- Treatment
- Special issues
Part I:
Objectives of the Guidelines
Objectives

To identify:

- When a diagnosis can be considered likely.
- The most appropriate diagnostic work-up.
- How patients with syncope should be risk stratified.
- When patients with syncope should be hospitalised.
- Which treatments are likely to be effective in preventing syncopal recurrences.
Part II: Background
Background

- Syncope is a transient symptom and not a disease.
- The diagnostic evaluation, and definition of a specific cause of syncope is difficult.
- There is an international need for:
  - Specific criteria to aid diagnosis
  - Clear-cut guidelines on how to choose tests
  - How to evaluate and use the results of tests to establish a cause of syncope
  - Summary recommendations for treatment
Role of the Task Force

• Develop a comprehensive outline of the issues needing to be addressed.
• Review applicable literature and develop summaries.
• Rank the evidence, and develop consensus recommendations.
• Provide specific recommendations for diagnosis and management of syncope.
Part III:
Classification, Epidemiology and Prognosis of Syncope
Definition

- Syncope is a symptom, the defining clinical characteristics of which are:
  - Transient
  - Self-limited loss of consciousness
  - Leads to falling
  - Onset is relatively rapid
  - Recovery is spontaneous, complete, and usually prompt

The underlying mechanism is a transient global cerebral hypoperfusion
Classification of Syncope

- Syncope must be differentiated from other “non-syncopal” conditions which also lead to transient loss of consciousness.

- Pathophysiological classification is based on the principal causes of the transient loss of consciousness.
ESC Task Force on Management (Diagnosis and Treatment) of Syncope

Real or apparent transient loss of consciousness

Syncope

Non-syncopal attacks
- With partial or complete loss of consciousness
- Without any impairment of consciousness
## Loss of consciousness: I - Syncope

<table>
<thead>
<tr>
<th>Category</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurally-mediated</td>
<td>Vasovagal faint (common faint):</td>
</tr>
<tr>
<td></td>
<td>- classical</td>
</tr>
<tr>
<td></td>
<td>- non-classical</td>
</tr>
<tr>
<td></td>
<td>Carotid sinus syncope</td>
</tr>
<tr>
<td></td>
<td>Situational faint</td>
</tr>
<tr>
<td></td>
<td>Glossopharyngeal neuralgia</td>
</tr>
<tr>
<td>Orthostatic hypotension</td>
<td>Autonomic failure (primary, secondary, drug and alcohol, post-exercise, post-prandium, volume depletion)</td>
</tr>
<tr>
<td>Cardiac arrhythmias</td>
<td>Bradycardia (sinus &amp; AV diseases)</td>
</tr>
<tr>
<td></td>
<td>Tachycardia (atrial &amp; ventricular)</td>
</tr>
<tr>
<td></td>
<td>Inherited (long QT, Brugada s.)</td>
</tr>
<tr>
<td></td>
<td>Implanted device malfunction</td>
</tr>
<tr>
<td></td>
<td>Drug-induced pro-arrhythmias</td>
</tr>
<tr>
<td>Structural cardiac</td>
<td>Valvular disease, Acute ischaemia, Obstructive diseases, Tamponade, Pulmonary embolism, Aortic dissection</td>
</tr>
<tr>
<td>Cerebro-vascular</td>
<td>Vascular steal syndromes</td>
</tr>
</tbody>
</table>

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Loss of consciousness: II - Non-syncopal

**Partial or complete loss of consciousness**

<table>
<thead>
<tr>
<th>Metabolic</th>
<th>Hypoxia, hyperventilation, hypoglycemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epilepsy</td>
<td></td>
</tr>
<tr>
<td>Intoxication</td>
<td></td>
</tr>
<tr>
<td>Vertebro-basilar TIA</td>
<td></td>
</tr>
</tbody>
</table>

**Any impairment of consciousness**

| Falls               |                                        |
| Cataplexy           |                                        |
| Drop attacks        |                                        |
| Psychogenic ‘pseudo-syncope’ | Fictitious disorders, malingering and conversion |
| Carotid TIA         |                                        |
Epidemiology of Syncope

- The Framingham study reports an incidence of 7.2 per 1000 person-year in a broad population sample.

- Assuming a constant incidence rate over time, the Framingham study calculates a 10-year cumulative incidence of 6%.

- In selected populations, such as the elderly, the annual incidence may be as high as 6%, with a recurrence rate of 30%.
Syncope: Reported Frequency

- Individuals <18 yrs
  - 15%
- Military Population 17-46 yrs
  - 20-25%
- Individuals 40-59 yrs*
  - 16-19%
- Individuals >70 yrs*
  - 23%

* during a 10-year period
Impact of Syncope

- Recurrences in ≈ 35% of patients at 3 years.
- Cardiac causes result in increased mortality.
- Syncope can result in other physical injuries to the patient (e.g. broken bones) or to others (e.g. due to motor vehicle accidents).
- Recurrent syncope has a significant negative impact on quality of life.
- Recurrences often prompt a hospital admission and expensive testing, resulting in considerable economic implications.
Prognostic stratification

- Structural heart disease is the most important predictor of total mortality and sudden death in patients with syncope.
Prognostic stratification

Poor prognosis

- Structural heart disease
- (independent of the cause of syncope)

Excellent prognosis

- Young, healthy, normal ECG
- Neurally-mediated syncope
- Orthostatic hypotension
- Unexplained syncope
Prognostic stratification

Risk stratification

- Age >45
- History of congestive heart disease
- History of ventricular arrhythmias
- Abnormal ECG

Arrhythmias or death within one year

- From 4-7% of patients with 0 factors
- To 58-80% in patients with ≥ 3 factors
Part IV: Diagnosis
The diagnostic strategy based on the initial evaluation

Management strategy
• Initial evaluation
  (history, physical exam, ECG & BP supine/upright)
• Laboratory investigations guided by the initial evaluation
• (Reappraisal)
• Treatment
Transient loss of consciousness

Initial evaluation:
- History, physical examination, supine & upright BP, standard ECG

- Syncope
  - Certain diagnosis
    - Cardiac likely
      - Cardiac tests
        - Treatment
  - Suspected diagnosis
    - Neurally-mediated tests
      - Re-appraisal
  - Unexplained syncope
    - Frequent or severe episodes
      - Neurally-mediated tests
        - Treatment
    - Single/rare episodes
      - No further evaluation
      - Re-appraisal
    - Confirm with specific test or specialist’s consultancy

- Non-syncopal attack
  - Treatment

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Diagnosis
Initial evaluation

(History, physical exam, ECG & BP supine/upright)
Initial evaluation

3 key questions

Question 1
- Syncope or non-syncopal attack?

Question 2
- Is heart disease present or absent?

Question 3
- Which history of syncope?
Initial evaluation

Important historical features

1 Questions about circumstances just prior to attack
   • Position (supine, sitting or standing)
   • Activity (supine, during or after exercise)
   • Situation (urination, defecation, cough or swallowing)
   • Predisposing factors (e.g., crowded or warm places, prolonged standing, post-prandial period)
   • Precipitating events (e.g., fear, intense pain, neck movements)

2 Questions about onset of attack
   • Nausea, vomiting, feeling of cold, sweating, aura, pain in neck or shoulders
Initial evaluation
Important historical features

3 Questions about attack (eyewitness)
- Skin colour (pallor, cyanotic)
- Duration of loss of consciousness
- Movements (tonic-clonic, etc)
- Tongue biting

4 Questions about end of attack
- Nausea, vomiting, diaphoresis, feeling of cold, confusion, muscle aches, skin colour, wounds
Initial evaluation

Important historical features

5 Questions about background
• Number and duration of syncopes
• Family history of arrhythmogenic disease
• Presence of cardiac disease
• Neurological history (Parkinsonism, epilepsy, narcolepsy)
• Internal history (diabetes, etc.)
• Medication (hypotensive and antidepressant agents)
The diagnostic strategy based on the initial evaluation

The initial evaluation may lead to:

- Certain diagnosis
- Suspected diagnosis
- No diagnosis (unexplained syncope)
Initial evaluation
Diagnostic criteria

- **Vasovagal syncope** is diagnosed if precipitating events such as fear, severe pain, emotional distress, instrumentation and prolonged standing are associated with typical prodromal symptoms.

- **Situational syncope** is diagnosed if syncope occurs during or immediately after urination, defaecation, cough or swallowing.

- **Orthostatic syncope** is diagnosed when there is documentation of orthostatic hypotension associated with syncope or presyncope.
Initial evaluation
ECG diagnostic criteria

Syncope due to cardiac arrhythmia is diagnosed in case of:
- Symptomatic sinus bradycardia <40 beats/min or repetitive sino-atrial blocks or sinus pauses >3 s.
- Mobitz II 2nd or 3rd degree atrioventricular block.
- Alternating left and right bundle branch block.
- Rapid paroxysmal supraventricular tachycardia or ventricular tachycardia.
- Pacemaker malfunction with cardiac pauses.
Initial evaluation
ECG diagnostic criteria

Syncope due to cardiac ischaemia is diagnosed when symptoms are present with ECG evidence of acute myocardial ischaemia with or without myocardial infarction, independently of its mechanism (*).

* The mechanism can be cardiac (low output or arrhythmia) or reflex (Bezold-Jarish reflex), but management is primarily that of ischaemia.
Clinical and ECG features that suggest a cardiac syncope

- Presence of severe structural heart disease
- Syncope during exertion or supine
- Palpitations at the time of syncope
- Suspected VT (e.g. heart failure or NSVT)
- BBB
- Mobitz 1 second degree AVB
- Sinus bradycardia <50 bpm
- WPW
- Long QT
- ARVD or Brugada Syndrome
Clinical and ECG features that suggest a neurally-mediated syncope

- Absence of cardiac disease.
- Long history of syncope.
- After sudden unexpected unpleasant sight, sound, or smell.
- Prolonged standing or crowded, warm places.
- Nausea, vomiting associated with syncope.
- During or in the absorptive state after a meal.
- After exertion.
- With head rotation, pressure on carotid sinus.
Diagnosis
Laboratory Investigations
Laboratory Investigations

Certain or suspected heart disease

- yes
  - Cardiac evaluation
    - Echocardiogram
    - ECG monitoring
    - Exercise test
    - EP study
    - ILR

- no
  - NM evaluation
    - Carotid sinus massage
    - Tilt testing
    - ATP test
    - ILR
## Laboratory investigations

| Useful (when indicated) | Carotid sinus massage  
|                        | Tilt testing  
|                        | Echocardiogram  
|                        | Holter/loop monitoring  
|                        | Electrophysiological test  
|                        | Exercise stress testing  
|                        | Implantable loop recorder |
| Almost never useful    | Electroencephalography  
|                        | Computed tomography and magnetic resonance imaging  
|                        | Carotid Doppler sonography  
|                        | Ventricular SAECG  
|                        | Coronary angiography  
|                        | Pulmonary scintigraphy |
Diagnosis
Re-appraisal
Re-appraisal

- Obtaining details of history
- Performing neurally-mediated tests in patients with heart disease
- Cardiac evaluation in patients without heart disease
- Neuropsychiatric evaluation
Diagnostic Yield

Initial evaluation | 52%
Laboratory tests | 14%
Unexplained | 34%

Data pooled from 7 population-based studies in the 1980’s (N = 1607)
Diagnostic Yield

Initial evaluation: 26%
Laboratory tests: 56%
Unexplained: 18%

Data from 3 Syncope Units (total 342 patients)
## Diagnostic Yield

<table>
<thead>
<tr>
<th>Test</th>
<th>Appropriate</th>
<th>Diagnostic</th>
<th>NND</th>
</tr>
</thead>
<tbody>
<tr>
<td>History/physical exam/supine-upright BP</td>
<td>308 (100%)</td>
<td>47 (15%)</td>
<td>7</td>
</tr>
<tr>
<td>Electrocardiogram</td>
<td>241 (78%)</td>
<td>25 (10%)</td>
<td>10</td>
</tr>
<tr>
<td>Echocardiogram</td>
<td>103 (33%)</td>
<td>3 (3%)</td>
<td>34</td>
</tr>
<tr>
<td>Electrocardiographic monitoring</td>
<td>82 (27%)</td>
<td>13 (16%)</td>
<td>6</td>
</tr>
<tr>
<td>Exercise test</td>
<td>22 (7%)</td>
<td>1 (5%)</td>
<td>22</td>
</tr>
<tr>
<td>Carotid sinus massage</td>
<td>177 (57%)</td>
<td>44 (24%)</td>
<td>4</td>
</tr>
<tr>
<td>Tilt testing</td>
<td>161 (52%)</td>
<td>94 (58%)</td>
<td>2</td>
</tr>
<tr>
<td>ATP test</td>
<td>47 (15%)</td>
<td>7 (15%)</td>
<td>7</td>
</tr>
<tr>
<td>Electrophysiological study</td>
<td>51 (17%)</td>
<td>14 (27%)</td>
<td>4</td>
</tr>
</tbody>
</table>

*Europace 2002; 4: 351-356*
Number of laboratory test/s necessary for diagnosis (other than Initial Evaluation)

- 0 test (initial evaluation) - 23%
- 1 test - 21%
- 2 test - 21%
- ≥3 test - 16%
- Unexplained - 18%
Causes of Loss of Consciousness

Data pooled from 4 recent population-based studies
(total 1640 patients)

Neurally-Mediated
- Vasovagal
- Carotid Sinus
- Situational
  - Cough
  - Micturition
  - Defaecation
  - Swallow
  - Others
  - 50%

Orthostatic hypotension
- Drug Induced
- ANS Failure
  - Primary
  - Secondary
- Volume depletion
  - 6%

Cardiac Arrhythmia
- Brady
  - Sick sinus
  - AV block
- Tachy
  - VT
  - SVT
  - Inherited
  - 11%

Structural Cardio-Pulmonary
- AMI
- Aortic Stenosis
- HOCM
- Pulmonary hypertension
- Others
  - 3%

Non-syncopal
- Metabolic
- Epilepsy
- Intoxications
- Drop-attacks
- Psychogenic
- TIA
- Falls
  - 9%

Unknown Cause = 20%

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Part V:
Treatment
Treatment of Syncope: Outline

- General principles
- Neurally-mediated reflex syncopal syndromes
- Orthostatic hypotension
- Cardiac arrhythmias as primary cause
- Structural cardiac or cardiopulmonary disease
- Vascular steal syndromes
- Metabolic disturbances
# ESC Classification of Task Force Recommendations

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Evidence and/or general agreement that a given treatment is beneficial, useful and effective;</td>
</tr>
<tr>
<td>Class II</td>
<td>Conflicting evidence and/or a divergence of opinion about the usefulness /efficacy of the treatment;</td>
</tr>
<tr>
<td>Class IIA</td>
<td>Weight of evidence/opinion is in favour of usefulness/efficacy;</td>
</tr>
<tr>
<td>Class IIB</td>
<td>Usefulness/efficacy is less well established by evidence/opinion;</td>
</tr>
<tr>
<td>Class III*</td>
<td>Evidence or general agreement that the treatment is not useful/effective and in some cases may be harmful.</td>
</tr>
</tbody>
</table>

* Use of Class III is discouraged by the ESC

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## ESC Levels of Evidence

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Evidence A</td>
<td>Data derived from multiple randomized clinical trials or meta-analyses</td>
</tr>
<tr>
<td>Level of Evidence B</td>
<td>Data derived from a single randomized clinical trial or large non-randomized studies</td>
</tr>
<tr>
<td>Level of Evidence C</td>
<td>Consensus of opinion of the experts and/or small studies, retrospective studies, registries</td>
</tr>
</tbody>
</table>
Treatment of Syncope: General Principles

Principal goals of treatment:
- Prevent recurrences
- Reduce risk of mortality

Additional goals:
- Prevent injuries associated with recurrences
- Improve quality of life
## Neurally-mediated syndromes: therapy

### Recommendations

<table>
<thead>
<tr>
<th>Initial treatment: Education and reassurance</th>
<th>Sufficient for most</th>
</tr>
</thead>
<tbody>
<tr>
<td>No treatment</td>
<td>Single syncope and no high risk settings</td>
</tr>
<tr>
<td>Additional treatment</td>
<td>High risk or high frequency settings</td>
</tr>
</tbody>
</table>
Neurally-mediated syndromes: therapy

Additional treatment (high risk or high frequency)

- Syncope is very frequent, e.g. alters the quality of life

- Syncope is recurrent and unpredictable (absence of premonitory symptoms) and exposes patients to “high risk” of trauma

- Syncope occurs during the prosecution of a ‘high risk’ activity (e.g., driving, machine operation, flying, competitive athletics, etc)
Neurally-mediated syndromes: therapy

Class I:
- Explanation and reassurance
- Avoidance of trigger events
- Modification or discontinuation of hypotensive drug treatment
- Cardiac pacing in cardioinhibitory or mixed carotid sinus syndrome

Class II:
- Volume expansion (salt supplements, exercise program or head-up tilt sleeping (>10°) in posture-related syncope).
- Isometric leg and arm counter-pressure manoeuvres in patients with vasovagal syncope.
- Tilt training in patients with vasovagal syncope.
- Cardiac pacing in cardioinhibitory vasovagal syncope (>5 attacks per year or severe physical injury or accident and age >40).
Treatment of Orthostatic Hypotension

Treatment Goals

- Prevention of symptom recurrence and associated injuries
- Improvement of quality of life
- Establishment of the underlying diagnosis
## Treatment of Orthostatic Hypotension (cont.)

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-induced autonomic failure</td>
<td>Eliminate the offending agent</td>
</tr>
<tr>
<td>Primary &amp; secondary autonomic failure</td>
<td>Modify physical factors that influence systemic blood pressure</td>
</tr>
</tbody>
</table>
Treatment of Orthostatic Hypotension

Class I Recommendations

• Syncope due to orthostatic hypotension should be treated in ALL patients. In many instances, treatment entails only modification of drug treatment for concomitant conditions.
Treatment of Cardiac Arrhythmias as Primary Cause

Treatment Goals

- Prevention of symptom recurrence
- Improvement of quality of life
- Reduction of mortality risk
Treatment of Cardiac Arrhythmias as Primary Cause (cont.)

- Class I Recommendations
- Syncope due to cardiac arrhythmias must receive treatment appropriate to the cause in all patients in whom it is life-threatening and when there is a high risk of injury.
Treatment of Cardiac Arrhythmias as Primary Cause (cont.)

Class II Recommendations

- Treatment may be employed when the culprit arrhythmia has not been demonstrated and a diagnosis of life-threatening arrhythmia is presumed from surrogate data.

- Treatment may be employed when a culprit arrhythmia has been identified but is not life-threatening or presenting a high risk of injury.
Sinus node dysfunction (including bradycardia/tachycardia syndrome)

- Cardiac pacemaker therapy is indicated and is proven highly effective when bradyarrhythmia is documented as the cause of the syncope (Class I, Level B).
- Physiological pacing (atrial or dual-chamber) is superior to VVI pacing (Class I, Level A)
- Elimination of drugs that may increase susceptibility to bradycardia should be considered (Level C)
- Catheter ablation for control of atrial arrhythmias may have a role in selected patients with brady-tachy syndrome (Level C)
Treatment of Cardiac Arrhythmias as Primary Cause (cont.)

AV conduction system disease

- Cardiac pacing is first-line therapy for treatment of syncope in symptomatic AV block (Class I, Level B).
- Pacing improves survival and prevents syncopal recurrences in patients with heart block (Level B).
- Pacing may be life-saving in patients with BBB and syncope (if suspected mechanism is intermittent AV block) (Level C).
- Consider VT or VF as a possible cause of syncope in these patients if they also have LV dysfunction.
Treatment of Cardiac Arrhythmias as Primary Cause (cont.)

- Paroxysmal SVT and VT
- SVTs are uncommon as a cause of syncope.
- Syncope due to acquired torsades de pointes (TdP) as a result of drugs is not uncommon. The causal drug should be eliminated immediately.
- In syncope due to VT, amiodarone may provide benefit in the absence of heart disease. If LV function is depressed, an ICD is warranted.
- The RV outflow tract and bundle-branch reentry forms of VT may be amenable to catheter ablation. (An ICD is also indicated with LV dysfunction.)
Indications for ICD therapy

Class I Recommendations
- Documented syncopal VT or VF (Level A)
- Undocumented syncope, previous MI and inducible SMVT (Level B)

Class II Recommendations
- Unexplained syncope and depressed ventricular function (Level B)
- Established long QT syndrome, Brugada Syndrome, ARVD or HOCM with a family history of sudden death (Level C)
- Brugada Syndrome or ARVD and inducible VT/VF (Level C)
Treatment of Cardiac Arrhythmias as Primary Cause (cont.)

Implanted device (pacemaker, ICD) malfunction

- Implantable pacing systems are rarely the cause of syncope or near-syncope.
- If syncope is attributable to the implanted device:
  - Evidence of battery depletion/failure, or lead failure device or lead replacement is indicated.
  - Evidence of pacemaker syndrome, device re-programming or replacement is indicated.
  - In the event an ICD fails to detect and/or treat an arrhythmia, re-programming generally resolves the problem.
Treatment of Vascular Steal Syndromes

- Syncope associated with upper extremity exercise in the setting of subclavian steal syndrome may warrant surgery or angioplasty.

- Direct corrective angioplasty or surgery is usually feasible and effective (Class I, Level C).
Metabolic Disturbances: Hyperventilation

- Hyperventilation resulting in hypocapnia and transient alkalosis may be responsible for confusional states or behavioral disturbances.
- Clearcut distinction between such symptoms and syncope may be difficult.
- Frequently associated with anxiety episodes and/or ‘panic’ attacks.
- Recurrent fainted associated with hyperventilation should justify a psychiatric consultation.
Part VI:
Special Issues in Evaluating Patients with Syncope
When to Hospitalise a Patient with Syncope (for Diagnosis)

- Suspected or known significant heart disease
- ECG abnormalities suggesting an arrhythmia
- Syncope during exercise
- Syncope occurring in supine position
- Syncope causing severe injury
- Family history of sudden death
- Sudden onset of palpitations in the absence of heart disease
- Frequent recurrent episodes.
When to Hospitalise a Patient with Syncope (for Treatment)

- Cardiac arrhythmias as cause of syncope
- Syncope due to cardiac ischaemia
- Syncope secondary to structural cardiac or cardiopulmonary diseases
- Stroke or focal neurologic disorders
- Cardioinhibitory neurally-mediated syncope when a pacemaker implant is planned.
Syncope in the Older Adult: Background

- Incidence > 6% per year
- Prevalence 10%
- Two-year recurrence 30%
- Most common causes of syncope:
  - Orthostatic hypotension (20-30% of patients)
  - Carotid sinus hypersensitivity (up to 20% of patients)
  - Neurally-mediated syncope (up to 15%)
  - Cardiac arrhythmias (up to 20%)
Syncope in the Older Adult: Diagnostic Evaluation

- Pursue witness accounts when possible
- Include in history taking:
  - Social circumstances, injurious events, impact of events on confidence, ability to perform ADLs independently
- Determine timing of syncope occurrence:
  - Orthostatic hypotensive events usually occur in the AM
  - Association with meals, medications, nocturnal micturition, etc.
- Detailed medication history.
- Co-morbid diagnoses (especially Parkinson’s, diabetes, anaemia, hypertension, ischaemic heart disease, heart failure).
Syncope in the Older Adult: Examination

- Assessment of neurological and locomotor systems
  - Including observation of gait and standing balance (eyes open & eyes closed).
- Determine if cognitive impairment is present (mini-mental state examination).
Syncope in the Older Adult: Investigations

- The diagnostic evaluation should include the same basic components as for younger adult.
- Exception is routine supine and upright carotid sinus massage.
- Repeated morning measurements are recommended to determine if orthostatic hypotension exists.
- 24-hr ambulatory BP may be helpful if meals or medications are suspected.
- If symptoms continue, or > 1 cause is suspected, further evaluation is indicated.
Syncope in the Older Adult: Evaluation of the Frail and Elderly

- The rigour of assessment should depend on compliance with tests and on prognosis.
- For patients who have difficulty standing unaided, head-up tilt can be used to assess orthostatic changes.
- Clinical decisions regarding the value of a syncope evaluation should be made for each patient based on the benefits to the individual.
Syncope in the Older Adult: Conclusions

Class I Recommendations:

- Morning orthostatic blood pressure measurements and supine and upright carotid massage are integral to the initial evaluation unless contra-indicated.
- The evaluation of mobile, independent, cognitively normal older adults is as for younger individuals.
- In frailer older adults, evaluation should be modified according to prognosis.
Syncope in Paediatric Patients: Background

- As many as 15% of children may have at least one episode of syncope prior to age 18

- Most common causes of syncope:
  - Neurally-mediated syncope (61-71%)
  - Cerebrovascular and psychogenic syncope (11-19%)
  - Cardiac syncope (6%)
Syncope in Paediatric Patients: Differential Diagnosis

- Careful personal and family history
  - First-degree relative who faints?
  - Any history of: LQTS, Brugada, Kearns-Sayre syndrome, AF, WPW, catecholaminergic polymorphic VT, ARVD, congenital heart disease repair, HOCM, anomalous coronary artery, pulmonary artery hypertension, or myocarditis

- Cardiac aetiology should be suspected:
  - In the presence of congenital, structural or functional heart disease
  - Syncope with exertion
Syncope in Paediatric Patients: Diagnostic Work-up

- Physical exam and ECG.
- Tilt-testing can probably be deferred until after a second episode if history indicative of neurally-mediated syncope.
- Tilt test duration should be shorter in teenagers than in adults (< 10 min).
- 24-hour Holter or loop-recorder should be used for syncope with palpitations.
- Cardiac consultation and Echocardiogram for evidence of heart murmur.
- EEG is indicated for prolonged loss of consciousness, seizure activity, and post-ictal phase of lethargy/confusion.
Syncope in Paediatric Patients: Therapy

- Neurally-mediated syncope: behaviour modification, salt, increased fluids.
- Pharmacological therapy reserved for continued symptoms despite behaviour modification.
- Pacemakers should be avoided whenever possible.
- Breath-holding spells do not require therapy unless longer asystole is present (potential for cerebral injury).
Syncope Management Facilities

A proposed model of organisation for the evaluation of the syncope patient in a community
Organising the Management of Syncope

Initial evaluation

(Emergency dept., In-and out-hospital service, General practitioner)

- Diagnosis certain
  - Discharge or Treatment
- Syncope-like condition
  - Refer to Neurology/ Psychiatry as appropriate
- Diagnosis suspected or unexplained
  - Syncope facility (“Syncope Unit”)
  - Full access to cardiological and autonomic tests and specialists’ consultancies

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Syncope management facilities: ESC standards

Professional skill mix:

- Core medical and support personnel should be involved full time or most of the time.
- Experience and training in key components of cardiology, neurology, emergency and geriatric medicine.

It is probably not appropriate to be dogmatic
Syncope management facilities: ESC standards

Core equipment:
- Surface ECG recording
- Phasic blood pressure monitoring
- Tilt table testing equipment
- External and internal (Implantable) ECG loop recorder systems
- 24 hour ambulatory blood pressure monitoring
- 24 hour ambulatory ECG
- Autonomic function testing
Syncope management facilities: ESC standards

Preferential diagnostic access to:
- Echocardiography
- EP studies
- Stress testing
- CT and MRI scans
- Electroencephalography
Syncope management facilities: ESC standards

Preferential therapy access to:

- Pacemaker implantation
- ICD implantation
- Catheter ablation of arrhythmias
- ... and to any eventual therapy for syncope
Syncope management facilities: ESC standards

Setting

The majority of syncope patients should be investigated as out-patients or day cases.

A major objective of the syncope facility is to reduce the number of hospitalisations.
Driving and syncope

ESC Task Force report on driving and heart disease (1998)*

Group 1:
  • Motorcycles, cars and small vehicles with/without trailer
Group 2:
  • Vehicles over 3.5 metric tonnes, passenger vehicles > 9 seats
Intermediate:
  • Taxicabs, small ambulances and some other vehicles

* Eur Heart J 1998; 19: 1165-77

Syncope Guidelines Slide-Set © 2004 European Society of Cardiology
Driving and syncope: Disqualifying criteria

Cardiac arrhythmias

<table>
<thead>
<tr>
<th></th>
<th>Private drivers</th>
<th>Vocational drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Rx</td>
<td>Until successful treatment is established</td>
<td>Until successful treatment is established</td>
</tr>
<tr>
<td>Pacemaker implant</td>
<td>Within one week</td>
<td>Until appropriate function is established</td>
</tr>
<tr>
<td>Successful catheter ablation</td>
<td>Within one week</td>
<td>Until long-term success is confirmed (3 mos)</td>
</tr>
</tbody>
</table>
# Driving and syncope: Disqualifying criteria

## Vasovagal / Carotid sinus

<table>
<thead>
<tr>
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<th>Private drivers</th>
<th>Vocational drivers</th>
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</thead>
<tbody>
<tr>
<td>Single/mild</td>
<td>No restrictions</td>
<td>No restriction unless it occurred during driving</td>
</tr>
<tr>
<td>Severe</td>
<td>Until symptoms controlled</td>
<td>Permanent restriction unless effective treatment has been established</td>
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</tbody>
</table>
# Driving and syncope: Disqualifying criteria

## Unexplained syncope

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<th>Private drivers</th>
<th>Vocational drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/mild</td>
<td>No restriction unless it occurred during driving</td>
<td>Until diagnosis and successful treatment is established</td>
</tr>
<tr>
<td>Severe</td>
<td>Until diagnosis and successful treatment is established</td>
<td>Until diagnosis and successful treatment is established</td>
</tr>
</tbody>
</table>
Glossary of Uncertain Terms: Panel Advisories

- Do not use ‘convulsive’ syncope - it carries the risk of increasing confusion between syncope & epilepsy.
- Use of ‘drop attacks’ should be restricted to: a fall to ones knees w/out loss of consciousness.
- The use of ‘dysautonomia’ should be reserved for Riley-Day syndrome.
- It is unknown whether ‘hyperventilation’ can cause loss of consciousness.
- Use of ‘pre-syncope’ is an imprecise term for all sensations preceding syncope, regardless of loss of consciousness.
Glossary of Uncertain Terms: Panel Advisories (cont.)

- ‘Neurally-mediated’ syncope is a synonym for ‘reflex’ syncope.
- ‘Neurocardiogenic’ syncope should be used strictly for reflex syncope in which the reflex trigger originates in the heart.
- ‘Vasodepressor syncope’ should be used strictly for reflex syncope in which the vasodepressor reflex is documented to occur in the absence of reflex bradycardia.
- ‘Neurogenic’ syncope is a superfluous alternative for ‘reflex syncope’.
- ‘Orthostatic intolerance’ should be restricted to summarizing a patient’s complaints.