Definition of syncopal and non-syncopal TLOC

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Definition (1)

- **Syncope** is a TLOC, *due to transient global cerebral hypoperfusion*, characterized by rapid onset, short duration *and* spontaneous complete recovery.
**Definition (2)**

- **Transient loss of consciousness (TLOC)** is a state of real or apparent loss of consciousness with loss of awareness, characterized by amnesia for the period of unconsciousness, abnormal motor control, loss of responsiveness, and a short duration.

- **TLOC is syncope** when there is:
  a) presence of features specific for reflex, orthostatic hypotension, or cardiac syncope, *and*;
  b) absence of features specific for other forms of TLOC.
Classification

TLOC

Nontraumatic TLOC

Syncope
- Reflex syncope
- Orthostatic hypotension
- Cardiac

Epileptic seizures
- Tonic-clonic seizures

Psychogenic
- Psychogenic pseudosyncope

TLOC due to head trauma

Rare causes
- Subclavian steal syndrome
- Vertebrobasilar TIA
- Subarachnoid haemorrhage
- Cyanotic breath holding spell
Classification
Reflex (neurally-mediated) syncope

● Vasovagal:
  – orthostatic VVS: standing, less common sitting,
  – emotional: fear, pain (somatic or visceral), instrumentation, blood phobia.

● Situational:
  – micturition,
  – gastrointestinal stimulation (swallow, defaecation),
  – cough, sneeze,
  – post-exercise,
  – others (e.g. laughing, brass instrument playing).

● Carotid sinus syndrome.

● Non-classical forms (without prodromes and/or without apparent triggers and/or atypical presentation.)
Classification
Conditions (of real or apparent LOC) which may be incorrectly diagnosed as syncope

- Generalized seizures, complex partial seizures, absence epilepsy.
- Psychogenic pseudosyncope.
- Falls without TLOC.
- Intracerebral or subarachnoid haemorrhage.
- Vertebrobasilar TIA.
- Carotid TIA.
- Subclavian steal syndrome.
- Cataplexy.
- Metabolic disorders including hypoglycaemia, hypoxia, hyper-ventilation with hypocapnia.
- Intoxication.
- Coma.
- Cardiac arrest.
Presentation of patient with probable TLOC

TLOC present? (history)

- No TLOC: Act as needed
- Syncope: Initial syncope evaluation (H&P exam, ECG, supine and standing BP)
- TLOC - non syncopal: 
  - Epileptic seizure
  - Psychogenic TLOC
  - TLOC, rare cause: Treat appropriately

Risk stratification

- Certain or highly likely diagnosis: Start treatment
- Uncertain diagnosis: 
  - High-risk of short-term serious events: Early evaluation & treatment
  - Low-risk but recurrent syncopes: Ancillary tests followed by treatment
  - Low-risk, single or rare recurrences: Explanation, no further evaluation

2018 ESC Guidelines on Syncope – Michele brignole & Angel Moya
EHJ Doi:10.1093/eurheartj/ehy037
The initial evaluation of T-LOC

4 key questions

Question #1
Does the event concern TLOC?

If yes

Question #2
Is TLOC of syncopal origin?

If yes

Question #3
Which is the risk?

If yes

Question #4
Is there a diagnosis?
The initial syncope evaluation

- **For all:**
  - History,
  - physical examination (including standing BP),
  - standard ECG.

- **In selected cases (when appropriate):**
  - echocardiogram (if SHD is suspected),
  - in-hospital monitoring (if arrhythmia is suspected),
  - tilt testing (if OH or NMS are suspected),
  - carotid sinus massage (in pts >40 yrs),
  - blood tests (pO₂ & gas analysis, haematocrit & blood cells count, troponin, d-dimer).
## Reflex syncope and OH

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. VVS is highly probable if syncope is precipitated by pain or fear or standing, and is associated with typical progressive prodrome (pallor, sweating, nausea).</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>2. Situational reflex syncope is highly probable if syncope occurs during or immediately after specific triggers.</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>3. Syncope due to OH is confirmed when syncope occurs while standing and there is concomitant significant OH.</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>4. In the absence of the above criteria, reflex syncope and OH should be considered likely when the features that suggest reflex syncope or OH are present and the features that suggest cardiac syncope are absent.</td>
<td>IIa</td>
<td>C</td>
</tr>
</tbody>
</table>
Cardiac syncope

1. Arrhythmic syncope is highly probable when the ECG shows:
   - Persistent sinus bradycardia <40 b.p.m. or sinus pauses >3 seconds in awake state and in absence of physical training,
   - Mobitz II second- and third-degree AV block,
   - Alternating left and right BBB,
   - VT or rapid paroxysmal SVT,
   - Non-sustained episodes of polymorphic VT and long or short QT interval,
   - Pacemaker or ICD malfunction with cardiac pauses.
## Diagnostic criteria with initial evaluation (III)

### Recommendations

<table>
<thead>
<tr>
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<th>Class</th>
<th>Level</th>
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<tbody>
<tr>
<td><strong>Cardiac syncope</strong></td>
<td></td>
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<tr>
<td>2. Cardiac-ischaemia–related syncope is confirmed when syncope presents with evidence of acute myocardial ischaemia with or without myocardial infarction.</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>3. Syncope due to structural cardiopulmonary disorders is highly probable when syncope presents in patients with prolapsing atrial myxoma, left atrial ball thrombus, severe aortic stenosis, pulmonary embolus, or acute aortic dissection.</td>
<td>I</td>
<td>C</td>
</tr>
</tbody>
</table>
Tilt testing: **Psychogenic pseudosyncope**

*Figuire: Tilt test with marked changes in heart rate (HR) and blood pressure (BP).*

- **HR**
  - Tilt up: Stable reading
  - Tilt down: Increased HR

- **BP**
  - Tilt up: Stable reading
  - Tilt down: Decreased BP

**Psychogenic pseudosyncope**

5 min.
Tilt testing: **Psychogenic pseudosyncope**

![Graph showing HR and BP during tilt testing](#)

- **HR**: bpm
- **BP**: mmHg

**Example of psychogenic pseudosyncope**

- **Tilt up**
- **Tilt down**
- **Attack**

5 min
## Video recording

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<th>Level</th>
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</thead>
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<tr>
<td>1. Home video recordings of spontaneous events should be considered. Physicians should encourage patients and their relatives to obtain home video recordings of spontaneous events.</td>
<td>IIa</td>
<td>C</td>
</tr>
<tr>
<td>2. Adding video recording to tilt testing may be considered in order to increase reliability of clinical observation of induced events.</td>
<td>IIb</td>
<td>C</td>
</tr>
</tbody>
</table>

**Note:**
- Recommendations are based on the 2018 ESC Guidelines on Syncope – Michele Brignole & Angel Moya.
- DOI: 10.1093/eurheartj/ehy037
Psychogenic transient loss of consciousness (PPS)

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<th>Level</th>
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<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Recording of spontaneous attacks with a video by eyewitness should be considered for diagnosis of PPS.</td>
<td>IIa</td>
<td>C</td>
</tr>
<tr>
<td>2. Tilt testing, preferably with concurrent EEG recording and video monitoring may be considered for diagnosis of PPS.</td>
<td>IIb</td>
<td>C</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Doctors who diagnose PPS should present the diagnosis of PPS to the patients.</td>
<td>IIa</td>
<td>C</td>
</tr>
<tr>
<td>4. Cognitive behavioural therapy may be considered in the treatment of PPS if attacks persist after explanation.</td>
<td>IIb</td>
<td>C</td>
</tr>
</tbody>
</table>
Organisational aspects: **Structure of the SU**

**Staffing of an SU is composed of:**

1. One or more physicians of any specialty who are **syncope specialists**.
2. A team comprised of professionals who will advance the care of syncope patients.

**Equipment:**

1. Essential Equipment/tests:
   - 12-lead ECG and 3-lead ECG monitoring,
   - non-invasive beat-to-beat blood pressure monitor,
   - tilt-table,
   - Holter monitors,
   - external loop recorders,
   - follow-up of implantable loop recorders (*),
   - 24-hour blood pressure monitoring,
   - Basic autonomic function tests.

2. Established procedures for:
   - Echocardiography
   - Electrophysiological studies
   - Stress test
   - Neuroimaging tests

3. Specialists’ consultancies (cardiology, neurology, internal medicine, geriatric, psychology), when needed
### Differentiating syncope from epileptic seizures

<table>
<thead>
<tr>
<th>Clinical feature</th>
<th>Syncope</th>
<th>Epileptic seizures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Useful features (contd)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongue bite</td>
<td>Rare, tip of tongue</td>
<td>Side of tongue (rarely bilateral)</td>
</tr>
<tr>
<td>Duration of LOC</td>
<td>10–30 seconds</td>
<td>May be many minutes</td>
</tr>
<tr>
<td>Confusion after attack</td>
<td>No understanding of situation for &lt;10 seconds in most syncope,</td>
<td>Memory deficit, i.e. repeated questions without imprinting for many minutes</td>
</tr>
<tr>
<td><strong>Features of limited utility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incontinence</td>
<td>Not uncommon</td>
<td>Common</td>
</tr>
<tr>
<td>Myoclonus</td>
<td>Very often</td>
<td>~60%,</td>
</tr>
<tr>
<td>Eyes open</td>
<td>Frequent</td>
<td>Nearly always</td>
</tr>
<tr>
<td>Fatigue and sleep afterwards</td>
<td>Common, particularly in children</td>
<td>Very common</td>
</tr>
</tbody>
</table>
Syncopal and Non-syncopal TLOC

Conclusions

The recently released ESC Guidelines on Syncope 2018 have offered help in understanding these clinical presentations and diagnosing them.