Quello che le linee guida non dicono:

**Sincope**

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Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

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Available on www.escardio.org/guidelines
Syncope is a transient loss of consciousness (T-LOC), due to transient global cerebral hypoperfusion, characterized by:
• rapid onset,
• short duration and
• spontaneous complete recovery
Clinical presentation

Loss of consciousness? 

Transient? Onset rapid? Duration short? Spontaneous recovery?

Yes

No

T-LOC

Non-traumatic

Traumatic

Syncope

Epileptic seizure

Functional

Rare causes

Falls

Altered consciousness

Coma

Aborted SCD

Other

T-LOC suspected syncope

Initial assessment:
1. History & Physical exam.
2. ECG
3. Other tests (when appropriate)

Diagnosis?

Yes → Treatment

No →

High short-term risk?

Yes → Immediate (in-hospital) evaluation & treatment

No → Low short-term risk recurrent episodes

Yes → Laboratory tests and/or specialist’s consultancy, as appropriate

No → Delayed treatment guided by ECG documentation

No further evaluation
The initial evaluation

ECG 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, defecation, cough or swallowing.

- **Orthostatic syncope** is diagnosed when there is a documentation of orthostatic hypotension associated with syncope or presyncope.
Syncope due to cardiac arrhythmia is diagnosed in case of:

- Symptomatic sinus bradycardia <40 beats/min or repetitive sinoatrial blocks or sinus pauses >3 s
- Mobitz II 2\textsuperscript{nd} or 3\textsuperscript{rd} degree atrioventricular block
- Alternating left and right bundle branch block
- Rapid paroxysmal supraventricular tachycardia or ventricular tachycardia
- Pacemaker malfunction with cardiac pauses
Syncope due to cardiac ischemia is diagnosed when symptoms are present with ECG evidence of acute myocardial ischemia 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 ischemia.
T-LOC suspected syncope

Initial assessment:
1. History & Physical exam.
2. ECG
3. Other tests (when appropriate)

Diagnosis?

Yes: Treatment

No: High short-term risk?

Yes: Immediate (in-hospital) evaluation & treatment

No: Low short-term risk recurrent episodes

Yes: Laboratory tests and/or specialist’s consultancy, as appropriate

No: Delayed treatment guided by ECG documentation

No further evaluation
<table>
<thead>
<tr>
<th><strong>ESC guidelines, Eur Heart J 2009</strong></th>
<th><strong>Canadian Cardiovascular Society Position Paper, Can J Cardiol 2011</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe structural or coronary artery disease (heart failure, low ejection fraction or previous myocardial infarction)</td>
<td>Heart failure and history of cardiac disease (ischemic, arrhythmic, obstructive, valvular)</td>
</tr>
<tr>
<td><strong>ECG features suggesting arrhythmic syncope</strong> (non-sustained ventricular tachycardia, bifascicular-block, inadequate sinus bradycardia (&lt; 50 bpm) or sino-atrial block, pre-excited QRS complex, ECG findings suggesting an inherited disease)</td>
<td>Abnormal ECG (any bradyarrhythmia, tachyarrhythmia, or conduction disease; new ischemia or old infarct)</td>
</tr>
<tr>
<td><strong>Clinical features suggesting arrhythmic syncope</strong> (syncope during exertion or supine, palpitations at the time of syncope, family history of sudden cardiac death)</td>
<td>Hypotension (systolic blood pressure &lt;90 mmHg)</td>
</tr>
</tbody>
</table>
| **Important co-morbidities:**  
  - Severe anaemia  
  - Electrolyte disturbance | Minor risk factors deserving an urgent specialist assessment: age >60 years, dyspnea, anemia (hematocrit <0.30), hypertension, cerebrovascular disease, family history of sudden death <50 years, syncope while supine, syncope during exercise, syncope with no prodromal symptoms |
T-LOC suspected syncope

Initial assessment:
1. History & Physical exam.
2. ECG
3. Other tests (when appropriate)

Diagnosis?

Yes → Treatment

No →

High short-term risk?

Yes → Immediate (in-hospital) evaluation & treatment

No →

Low short-term risk recurrent episodes

Yes → Laboratory tests and/or specialist’s consultancy, as appropriate

No →

No further evaluation

Delayed treatment guided by ECG documentation
The initial evaluation: diagnostic strategy

T-LOC suspected syncope

*Initial evaluation*

Syncope

T-LOC non-syncopal

Certain diagnosis

Uncertain diagnosis

Cardiac likely

Cardiac unlikely & recurrent episodes

Cardiac unlikely & rare episodes

Ecg monitoring

EPS

Stress test

Loop recorder

CSM

Tilt testing

Loop recorder

No further evaluation

Confirm with specific test or specialist’s consultancy

Evaluation of Guidelines in Syncope Study 2 (EGSYS-2)

Diagnostic flow

**Phase 1**
Initial evaluation

- **Enrolled & analyzed**: 541
  - Diagnosis: 272 (50%)
  - No diagnosis: 269 (50%)

**Phase 2**
Investigations

- Completed evaluation: 193
  - Diagnosis: 165 (94%)
  - No diagnosis: 28 (6%)

- Dropped-out: 76 (14%)

Eur Heart J 2006; 27: 76–82
The best management

*Evaluation of Guidelines in Syncope Study 2 (EGSYS-2)*

*Eur Heart J 2006; 27: 76–82*

### Diagnosis at Initial Evaluation

- **NMS**: 65%
- **Ortho Hypo**: 78%
- **Cardiac**: 54%
- **Non-syncopal**: 100%

### Diagnosis after Initial Evaluation

- **NMS**: 35%
- **Ortho Hypo**: 22%
- **Cardiac**: 46%
- **Non-syncopal**: 100%
Questa è la scienza............
....e nella pratica clinica ?

Il “gap” fra scienza e pratica clinica nella valutazione del paziente con sincope

www.gimsi.it
In theory, theory and practice are the same, but, in practice, they are substantially different.

Anonimous
Evaluation of Guidelines in Syncope Study 2 (EGSYS-2)

In-hospital pathway

465 Evaluable patients

281 (60%) Discharged from ED

184 (40%) Hospitalized

120 (26%) Management of syncope

64 (14%) Trauma or comorbidities

6 (1.3%) Died

Eur Heart J 2006; 27: 76–82
Syncope in the emergency department of the University of UTAH.
Daccarett et al
Europace 2011 (ahead of print)

Clinical practice

<table>
<thead>
<tr>
<th></th>
<th>Discharges</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (%)</td>
<td>136 (54%)</td>
<td>118 (46%)</td>
</tr>
<tr>
<td>Serious events within 7 days after the index visit (%)</td>
<td>5 (4%)</td>
<td>10 (8%)</td>
</tr>
</tbody>
</table>
Short-term outcome of syncope in the emergency department

<table>
<thead>
<tr>
<th>Average data from 14 studies:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Death within 7-30 days:</td>
<td>0.7%</td>
</tr>
<tr>
<td>Non-fatal severe outcome while in ED</td>
<td>7.5%</td>
</tr>
<tr>
<td>Non-fatal severe outcome in the next 7-30 days</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Canadian Cardiovascular Society Position Paper
*Can J Cardiol, 2011; 27: 246-253*
### Faint evaluation at University of Utah Hospital, 2009

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
<th></th>
<th>Estimated (according to the algorithm)</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total observed</td>
<td>Not appropriate</td>
<td>Appropriate</td>
<td>Appropriate not done</td>
</tr>
<tr>
<td>Admission</td>
<td>33</td>
<td>36%</td>
<td>64%</td>
<td>9%</td>
</tr>
<tr>
<td>Diagnosis at initial evaluation</td>
<td>29</td>
<td>41%</td>
<td>59%</td>
<td>29%</td>
</tr>
</tbody>
</table>

**Evaluation of Patients with “Faint” in an American Teaching Hospital: A Dire Need for a Standardized Approach**
Brignole, ...., Hamdan. PACE 2011; 34:284–290
Evaluation of Guidelines in SYncope Study

Total 980 patients

<table>
<thead>
<tr>
<th>Test</th>
<th>Useful by ESC guidelines</th>
<th>Not useful by ESC guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECG</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>Blood chemistry</td>
<td>77%</td>
<td></td>
</tr>
<tr>
<td>Chest X-ray</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>Holter/Ecg monitoring</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>CT/MRI scan</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Echocardiogram</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Carotid sinus massage</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>EEG</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Carotid echo-doppler</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Tilt testing</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Abdominal echo</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>EP study</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Coronary angiography</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Exercise test</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>

Europace 2003; 5: 283-291
# Faint evaluation at University of Utah Hospital, 2009

<table>
<thead>
<tr>
<th>Tests</th>
<th>Total observed</th>
<th>Not appropriate</th>
<th>Appropriate</th>
<th>Appropriate not done</th>
<th>Total estimated</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echocardiogram</td>
<td>62</td>
<td>65%</td>
<td>35%</td>
<td>15%</td>
<td>26</td>
<td>0.21</td>
</tr>
<tr>
<td>CSM</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td>26</td>
<td>0.00</td>
</tr>
<tr>
<td>Tilt testing</td>
<td>7</td>
<td>43%</td>
<td>57%</td>
<td>91%</td>
<td>44</td>
<td>0.04</td>
</tr>
<tr>
<td>Holter</td>
<td>21</td>
<td>62%</td>
<td>38%</td>
<td>11%</td>
<td>9</td>
<td>0.47</td>
</tr>
<tr>
<td>ELP</td>
<td>20</td>
<td>50%</td>
<td>50%</td>
<td>44%</td>
<td>18</td>
<td>0.42</td>
</tr>
<tr>
<td>ILP</td>
<td>3</td>
<td>0%</td>
<td>100%</td>
<td>62%</td>
<td>8</td>
<td>0.52</td>
</tr>
<tr>
<td>Stress test</td>
<td>11</td>
<td>36%</td>
<td>74%</td>
<td>42%</td>
<td>12</td>
<td>0.56</td>
</tr>
<tr>
<td>EPS</td>
<td>3</td>
<td>67%</td>
<td>33%</td>
<td>83%</td>
<td>6</td>
<td>0.19</td>
</tr>
<tr>
<td>Coronary angio</td>
<td>5</td>
<td>20%</td>
<td>80%</td>
<td>0%</td>
<td>4</td>
<td>0.88</td>
</tr>
<tr>
<td>Brain CT/MRI</td>
<td>22</td>
<td>59%</td>
<td>41%</td>
<td>0%</td>
<td>9</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Carotid sinus massage by hospital

Percent patients

EGSYS hospitals

Europace 2003; 5: 283-291
Holter/ECG monitoring by hospital

Percent patients

EGSYS hospitals

min 25th 50th 75th max

Europace 2003; 5: 283-291
Neurally-mediated syncope by hospital

Europace 2003; 5: 283-291
Cardiac syncope by hospital

Percent patients

EGSYS hospitals

Europace 2003; 5: 283-291
Limits of current management (I)

Initial diagnosis  Assigned diagnosis

Reflex
39 33
3 30

OH
3 4
11

Unknown
60 33
2 14

Cardiac
2 16

Non-sycopal
5

## Limits of current management (II)

<table>
<thead>
<tr>
<th></th>
<th>Diagnosis at initial evaluation n=191</th>
<th>Early diagnosis with tests n=541</th>
<th>No diagnosis n=159</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median</td>
<td>52</td>
<td>67</td>
<td>73</td>
<td>0.001</td>
</tr>
<tr>
<td>Males (%)</td>
<td>54%</td>
<td>51%</td>
<td>62%</td>
<td>0.05</td>
</tr>
<tr>
<td>Number of syncopes, median</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0.12</td>
</tr>
<tr>
<td>History of syncope, years</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td>No prodromes (%)</td>
<td>9%</td>
<td>30%</td>
<td>43%</td>
<td>0.001</td>
</tr>
<tr>
<td>Structural heart disease (%)</td>
<td>8%</td>
<td>16%</td>
<td>48%</td>
<td>0.001</td>
</tr>
<tr>
<td>ECG abnormalities (%)</td>
<td>9%</td>
<td>21%</td>
<td>47%</td>
<td>0.001</td>
</tr>
<tr>
<td>OESIL risk score, median</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td>EG_SYS risk score, median</td>
<td>-1</td>
<td>0</td>
<td>2</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Recurrence of syncope in 398 patients

Evaluation of Guidelines in Syncope Study 2 (EGSYS-2)

Ungar A et al. Eur Heart J 2010
Why should we need a Syncope Management Unit?

• We are not happy with current strategies:
  - not standardized
  - inappropriate use of diagnostic tests
  - high number of misdiagnosis
  - high number of still unexplained syncope.

• Multiple experiences with Syncope Facilities showed:
  - improvement in diagnostic yield
  - cost effectiveness (ie, cost per reliable diagnosis)
Italian Multidisciplinary Group for the Study of Syncope:

Established in 2003 by 5 national societies:
- arrhythmology,
- internal medicine,
- emergency medicine,
- geriatrics
- neurology

www.gimsi.it
**Scopi:**

1- Valutazione standardizzata e continuità di cura dalla valutazione iniziale fino alla terapia ed al follow-up

2- Ridurre il tasso di ospedalizzazione offrendo al paziente una alternativa diagnostica sicura e ben definita

[www.gimsi.it](http://www.gimsi.it)
GIMSI-certified Syncope Unit:
total 47 (year 2011)
Loss of consciousness: diagnostic flow

**Complete?**
- Yes, may be syncope
- No, consider:
  - Falls
  - TIA, stroke
  - Dizziness
  - Psychogenic
  - Drop attack

**Transient, short duration?**
- Yes, may be syncope
- No, consider:
  - Coma
  - Intoxication

**Rapid onset?**
- Yes, may be syncope
- No, consider:
  - Metabolic
  - Intoxications
  - TIA, stroke
  - Psychogenic

**Recovery spontaneous, complete and prompt?**
- Yes, may be syncope
- No, consider:
  - Epilepsy

**Loss of postural tone?**
- Yes, may be syncope
- No, consider:
  - Epilepsy

**Syncope likely**