



8th Annual Emirates
Cardiac Society
Conference



ACC Middle East
Conference 2017



DUBAI

OCTOBER 19 – 21, 2017



UNIQUE EDUCATIONAL EXPERIENCE
IN YOUR REGION

Syncope Guidelines What's new?

October 19th 2017

Mohamed Aljaabari MBBCh, FACC, FHRS

Consultant Electrophysiologist - Mafrq Hospital



ACC Middle East
Conference 2017

Case Presentation

- 35 Male presented with sudden loss of consciousness
- Fell from standing on his face fracturing 3 front teeth
- Symptoms were preceded by very brief dizziness
- Was walking to the water cooler in his office at work
- Suffering a viral illness and fevers for the previous 2 days
- Recovered immediately
- Went to ER to care for dental fractures
- Never had syncope before



Case Presentation

- PMH
 - Appendicitis 2005 s/p Lap Appendectomy
 - Post-operative DVT / PE treated with OAC
- Social Hx – occasional shisha, no EtOh,
- No family history of sudden cardiac death
- NKDA
- Medication – Paracetamol



Exam

- Vital Signs
- BP
 - 115/70 supine
 - 118/70 standing 0 minutes
 - 124/70 standing 1 minute
 - 125/70 standing 3 minutes
- HR 98 BPM Reg
- RR 20
- Sat 98%



Exam

- Anxious male, with 3 fractured incisors and small abrasion on forehead
- No JVD
- CVS exam RRR S1+2 no AS no M,R,G
- CTAB
- Soft nt BS+
- No LE Edema
- No focal neurological deficits



Syncope Guidelines What's New

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
© 2017 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION, THE AMERICAN
HEART ASSOCIATION, INC., AND THE HEART RHYTHM SOCIETY
PUBLISHED BY ELSEVIER

VOL. 70, NO. 5, 2017
ISSN 0735-1097/\$36.00
<http://dx.doi.org/10.1016/j.jacc.2017.03.003>

CLINICAL PRACTICE GUIDELINE

2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope



A Report of the American College of Cardiology/American Heart Association
Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

*Developed in Collaboration With the American College of Emergency Physicians and
Society for Academic Emergency Medicine*

Endorsed by the Pediatric and Congenital Electrophysiology Society



ACC Middle East
Conference 2017

Syncope Guidelines What's New – Objectives

- Definition
- Epidemiology
- Etiology
- Clinical approach / Risk stratification
- Diagnostic testing – brief overview



Syncope – Definition

- Abrupt, transient, complete loss of consciousness
- Loss of postural tone
- Rapid and spontaneous recovery
- Mechanism - cerebral hypoperfusion
- No features of other causes of loss of consciousness

Shen et al. J A C C Aug 2017 vol. 7 0 (5) e 3 9 – 1 1 0



ACC Middle East
Conference 2017

Syncope – Epidemiology

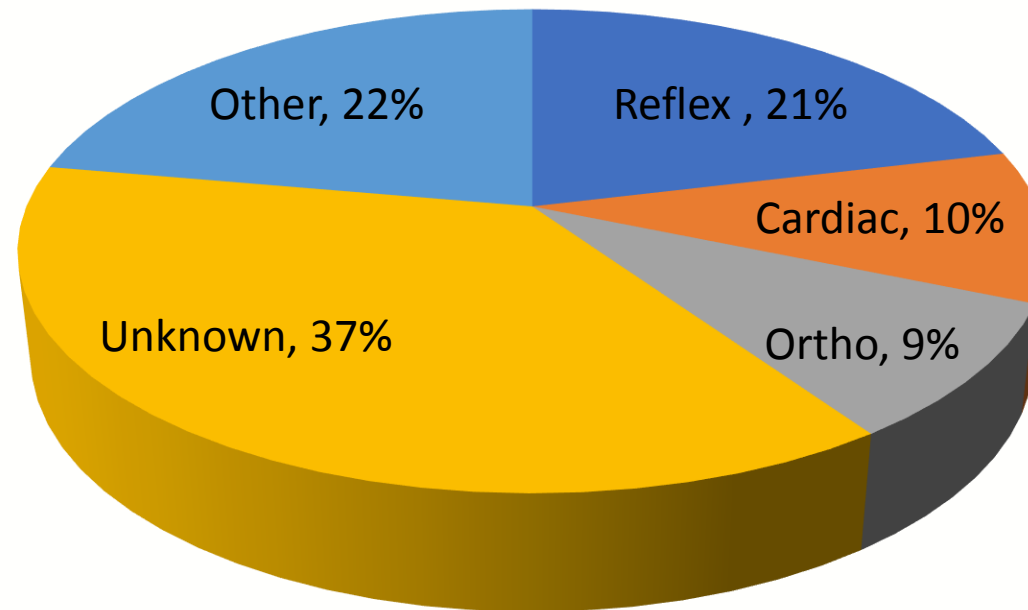
- Prevalence 41%
- Recurrent in 13.5%
- Female > Male
- Trimodal distribution peaks around 20, 60 and 80

Shen et al. J A C C Aug 2017 vol. 7 0 (5) e 3 9 – 1 1 0



ACC Middle East
Conference 2017

Syncope – Epidemiology

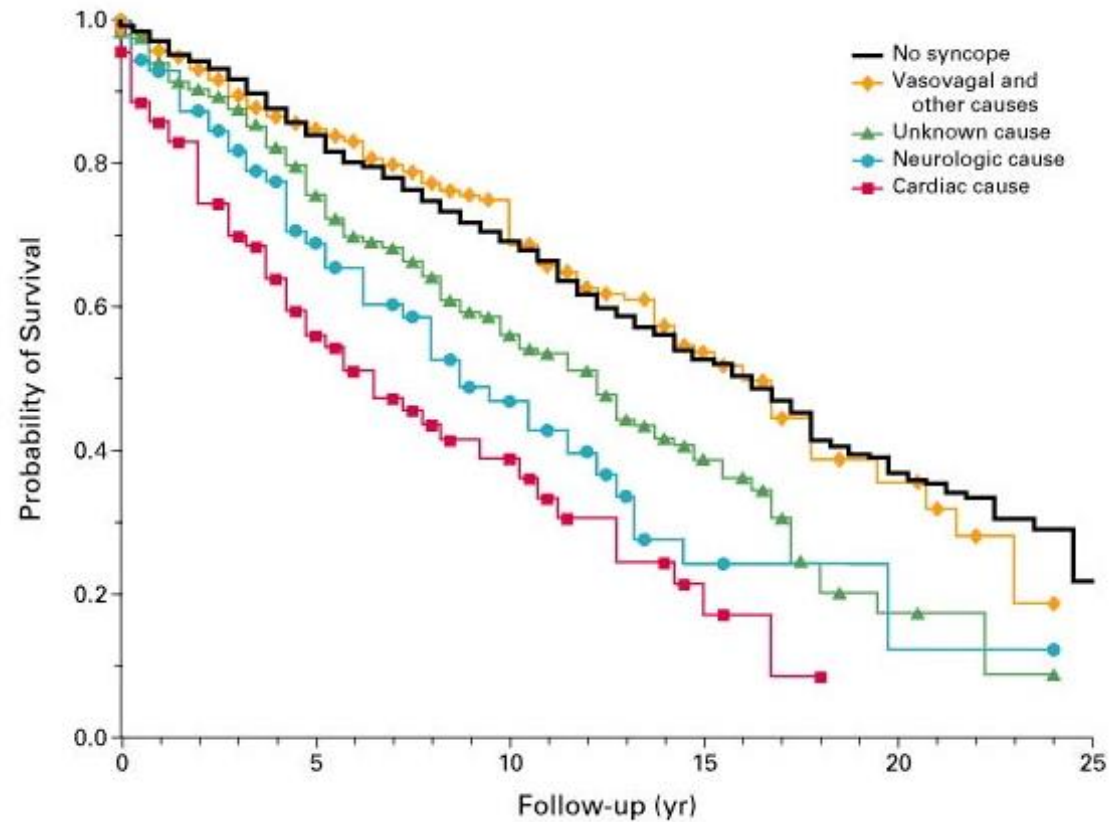


Soteriades et al. NEJM 2002 347:878-885



ACC Middle East
Conference 2017

Syncope – prognosis



Soteriades et al. NEJM 2002 347:878-885



ACC Middle East
Conference 2017

Syncope Etiology

Cardiac

Bradycardia

Tachycardia

hypotension due to low cardiac index

blood flow obstruction

Vasodilatation

acute vascular dissection

Non cardiac

reflex syncope

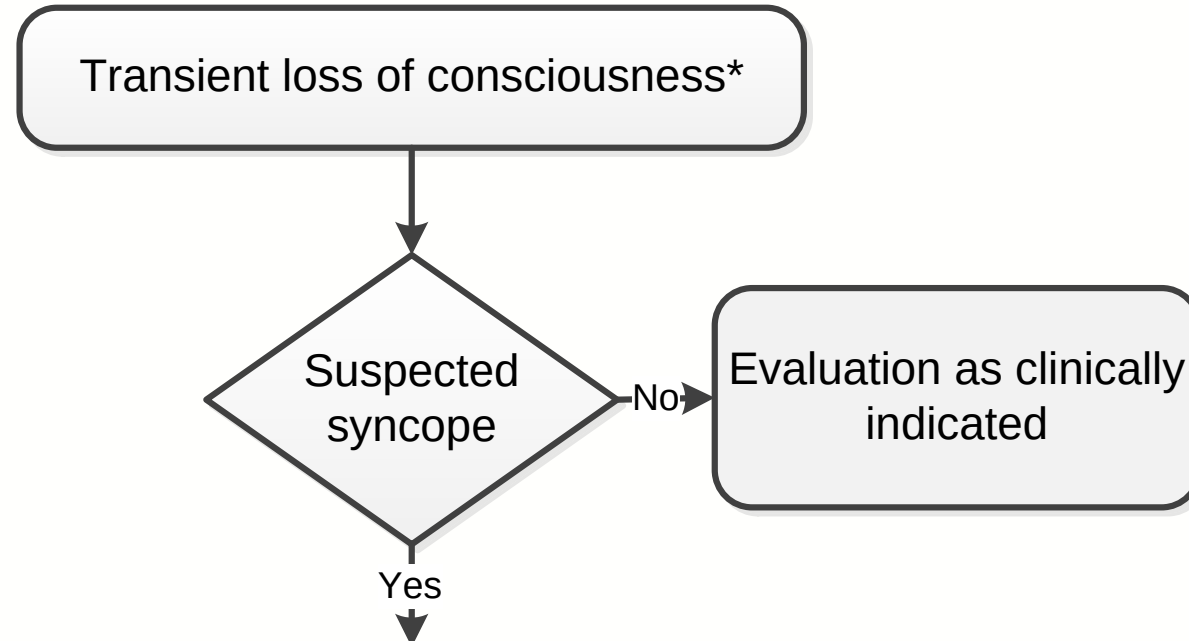
OH

volume depletion

dehydration blood loss



Syncope – Clinical evaluation



Case Presentation

- 35 Male presented with sudden loss of consciousness
- Fell from standing on his face fracturing 3 front teeth
- Symptoms were preceded by very brief dizziness
- Was walking to the water cooler in his office at work
- Suffering a viral illness and fevers for the previous 2 days
- Recovered immediately
- Went to ER to care for dental fractures
- Never had syncope before



Case Question 1

- What is the most effective diagnostic tool in determining the diagnosis and prognosis in a patient with syncope?
- 1- Electrocardiogram
- 2- History and physical exam
- 3- Tilt table testing
- 4- Invasive electrophysiology study



Case Question 1

- What is the most effective diagnostic tool in determining the diagnosis and prognosis in a patient with syncope?
- 1- Electrocardiogram
- 2- History and physical exam
- 3- Tilt table testing
- 4- Invasive electrophysiology study



History and Physical Examination

COR	LOE	Recommendation
I	B-NR	A detailed history and physical examination should be performed in patients with syncope.



History and Physical

- Goals
 - Determine diagnosis
 - Assess Prognosis



History

- Co-morbidities
- Medications
- Prodromal symptoms
- Triggers
- Witness history
- Family history



History Cardiac vs Non-cardiac

Cardiac

Age > 60

Male sex

Presence of IHD or SHD

Brief prodrome

Syncope during exertion

Syncope in the supine position

Low number of syncope episodes (1 or 2)

Abnormal cardiac examination

Family history of inheritable conditions

Non cardiac

Younger age

No known cardiac disease

Syncope only in the standing position

Positional change

Presence of prodrome

Specific triggers

Situational triggers

Frequent recurrence and prolonged history



History Cardiac vs Non-cardiac

Cardiac

Age > 60

Male sex

Presence of IHD or SHD

Brief prodrome

Syncope during exertion

Syncope in the supine position

Low number of syncope episodes (1 or 2)

Abnormal cardiac examination

Family history of inheritable conditions

Non cardiac

Younger age

No known cardiac disease

Syncope only in the standing position

Positional change

Presence of prodrome: n/v, warmth

Specific triggers

Situational triggers

Frequent recurrence and prolonged history



Physical

- Orthostatic BP
- Cardiovascular exam
- Brief neurological exam



Case Question 2

- What is the most appropriate investigation to assess this patient?
- 1- Electrocardiogram
- 2- Echocardiogram
- 3- Carotid Doppler US
- 4- Cardiac MRI

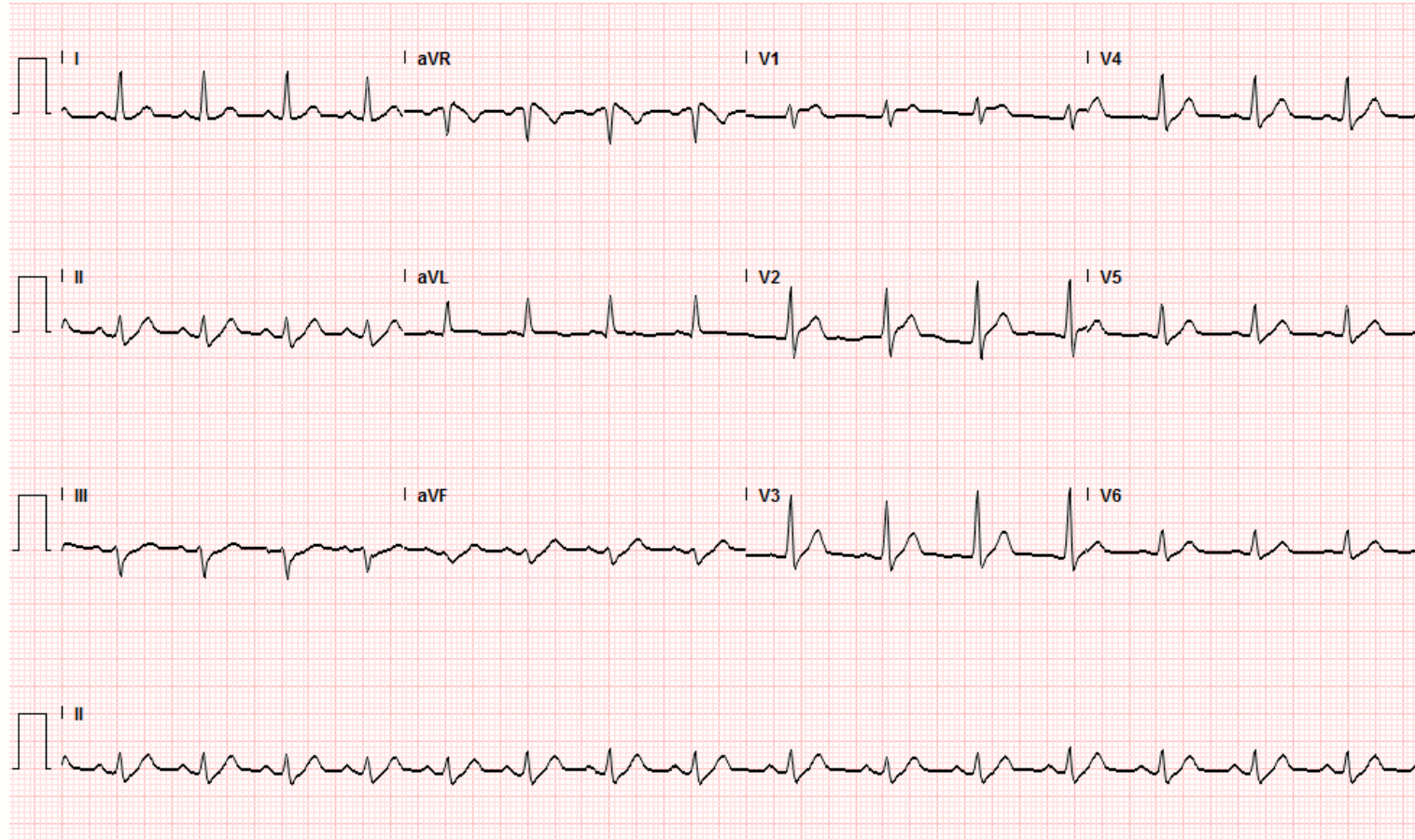


Case Question 2

- What is the most appropriate investigation to assess this patient?
- 1- Electrocardiogram
- 2- Echocardiogram
- 3- Carotid Doppler US
- 4- Cardiac MRI



Case ECG

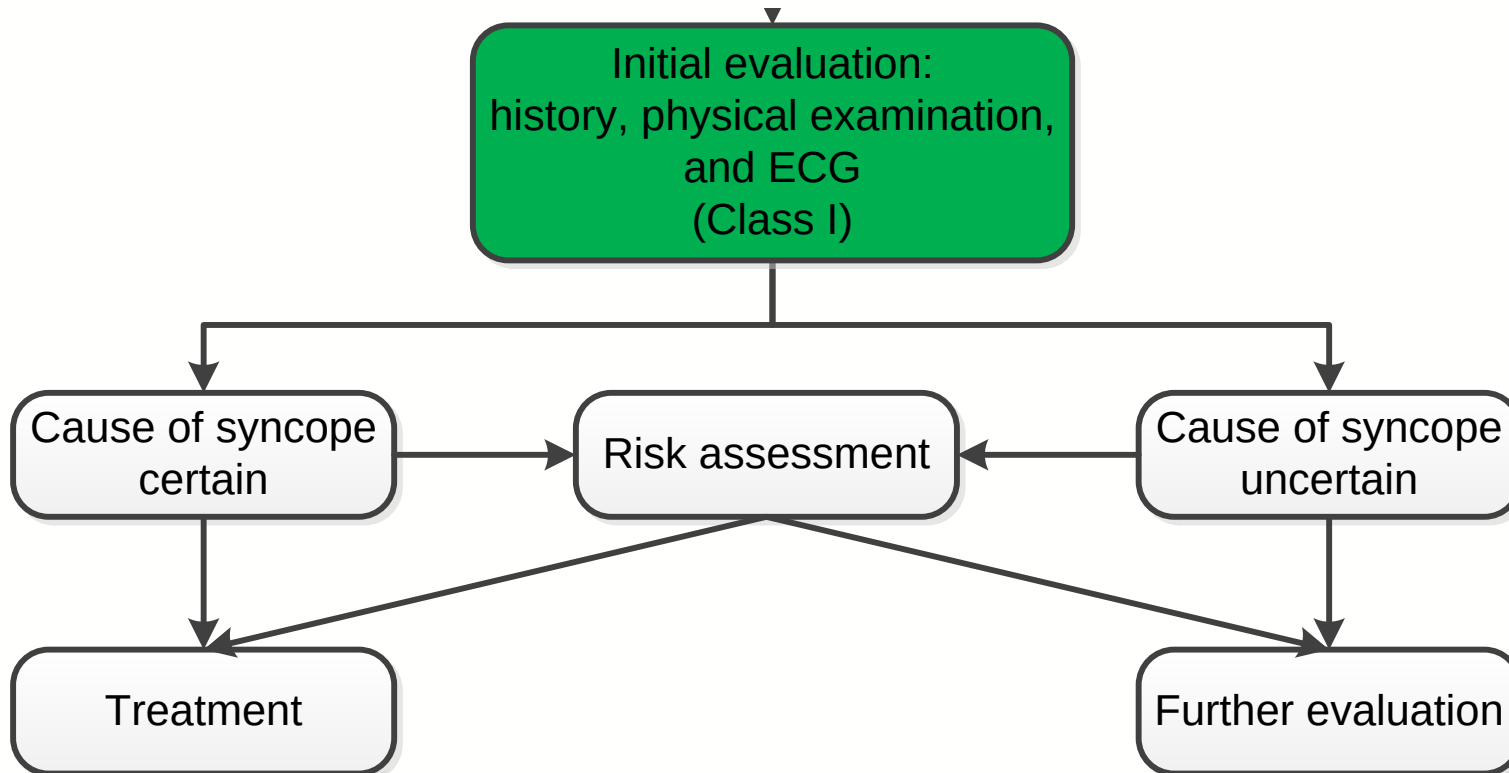


Syncope ECG

- Conduction disorders
- Sinus node dysfunction
- Arrhythmogenic substrate
 - CAD
 - WPW
 - ARVC
 - Brugada
 - LQTS
 - HCM
- Worse prognosis – LVH, AF, IVCD, V Pacing



Syncope – Clinical evaluation



Case Question 3

- What aspects in the history may help risk stratify this patient?
- 1- No previous history of syncope?
- 2- Presence of viral illness?
- 3- Presence of head injury?
- 4- Absence of any family history for sudden cardiac death?



Case Question 3

- What aspects in the history may help risk stratify this patient?
- 1- No previous history of syncope?
- 2- Presence of viral illness?
- 3- Presence of head injury?
- 4- Absence of any family history for sudden cardiac death?



Risk assessment

Study/ Reference	Year	Sample N	Events N (%)	Outcome Definition	ED Events*	Predictors	NPV (%)†
Martin (90)	1997	252	104 (41%)	1-y death/arrhythmia	Yes	Abnormal ECG‡; >45 y of age; VA; HF	93
Sarasin (74)	2003	175	30 (17%)	Inpatient arrhythmia	Yes	Abnormal ECG‡; >65 y of age; HF	98
OESIL (67)	2003	270	31 (11%)	1-y death	N/A	Abnormal ECG‡; >65 y of age; no prodrome; cardiac history	100
SFSR (72)	2004	684	79 (12%)	7-d serious events§	Yes	Abnormal ECG‡; dyspnea; hematocrit; systolic BP <90 mm Hg; HF	99
Boston Syncope Rule (70)	2007	293	68 (23%)	30-d serious events	Yes	Symptoms of acute coronary syndrome; worrisome cardiac history; family history of SCD; VHD; signs of conduction disease; volume depletion; persistent abnormal vital signs; primary central nervous event	100
Del Rosso (69)	2008	260	44 (17%)	Cardiac etiology	N/A	Abnormal ECG‡/cardiac history; palpitations; exertional; supine; precipitant (a low-risk factor); autonomic prodrome (low-risk factors)	99
STePS (68)	2008	676	41 (6%)	10-d serious events¶	Yes	Abnormal ECG‡; trauma; no prodrome; male sex	—
Syncope Risk Score (75)	2009	2,584	173 (7%)	30-d serious events#	No	Abnormal ECG‡; >90 y of age; male sex; positive troponin; history of arrhythmia; systolic BP >160 mm Hg; near-syncope (a low-risk factor)	97
ROSE (73)	2010	550	40 (7%)	30-d serious events#	Yes	Abnormal ECG‡; B-natriuretic peptide; hemoglobin; O ₂ Sat; fecal occult blood	98



Risk assessment

30 day

Male sex
Older age > 60
No prodrome
Palpitation precede LOC
Exertional syncope
Structural heart disease
Heart failure
Cerebrovascular disease
FHx of SCD
Evidence of bleeding
Persistent abnormal vital signs
Abnormal ECG
Positive troponin

1 Year

Male sex
Older age
Absence of N/V precede LOC
Ventricular arrhythmia
Cancer
Structural heart disease
Heart failure
Cerebrovascular
disease
Diabetes mellitus
High CHADS
Low GFR
Abnormal ECG



Risk assessment

30 day

Male sex

Older age > 60

No prodrome

Palpitation precede LOC

Exertional syncope

Structural heart disease

Heart failure

Cerebrovascular disease

FHx of SCD

Evidence of bleeding

Persistent abnormal vital signs

Abnormal ECG

Positive troponin

1 Year

Male sex

Older age

Absence of N/V precede LOC

Ventricular arrhythmia

Cancer

Structural heart disease

Heart failure

Cerebrovascular

disease

Diabetes mellitus

High CHADS

Low GFR

Abnormal ECG



ACC Middle East
Conference 2017

Risk Assessment – Serious conditions Arrhythmias

Sustained or symptomatic VT

Symptomatic conduction system disease

Symptomatic bradycardia or sinus pauses not neurally mediated

Symptomatic SVT

Pacemaker/ICD malfunction

Inheritable cardiovascular conditions predisposing to arrhythmias



Risk Assessment – Serious conditions

Structural

Cardiac ischemia

Severe aortic stenosis

Cardiac tamponade

HCM

Severe prosthetic valve dysfunction

Pulmonary embolism

Aortic dissection

Acute HF

Moderate-to-severe LV dysfunction



Risk Assessment – Serious conditions

Non-cardiac

Severe anemia/gastrointestinal bleeding

Major traumatic injury due to syncope

Persistent vital sign abnormalities



Risk Assessment

COR	LOE	Recommendations
I	B-NR	Evaluation of the cause and assessment for the short- and long-term morbidity and mortality risk of syncope are recommended.
IIb	B-NR	Use of risk stratification scores may be reasonable in the management of patients with syncope.

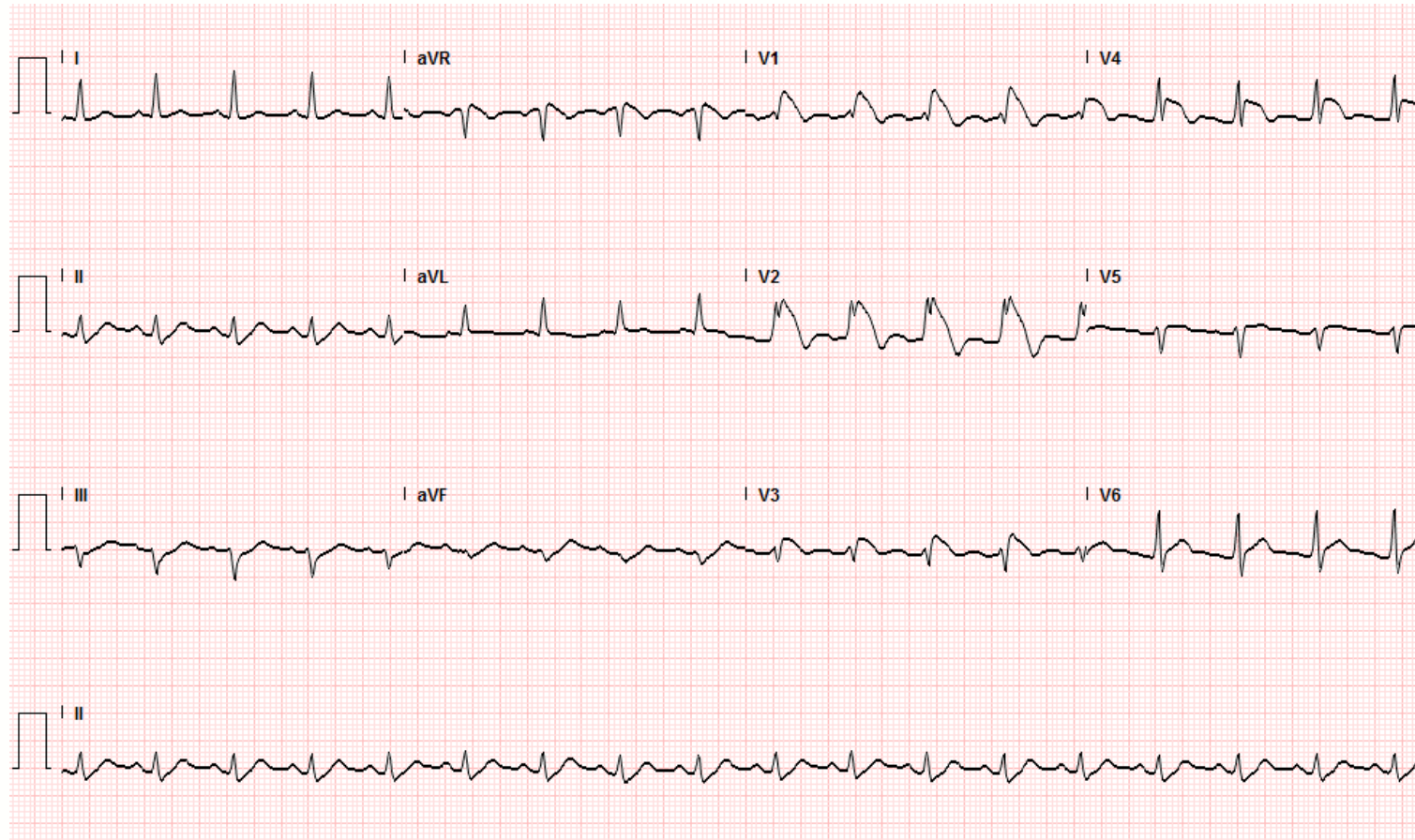


Case Question 4

- What is the disposition of this patient?
- 1- Outpatient followup with an electrophysiologist
- 2- Inpatient admission and evaluation with telemetry for further evaluation
- 3- Discharge home with symptomatic treatment for URTI no followup needed
- 4- Monitor in ER for 24 hours then discharge if no further events



Case ECG – High chest leads



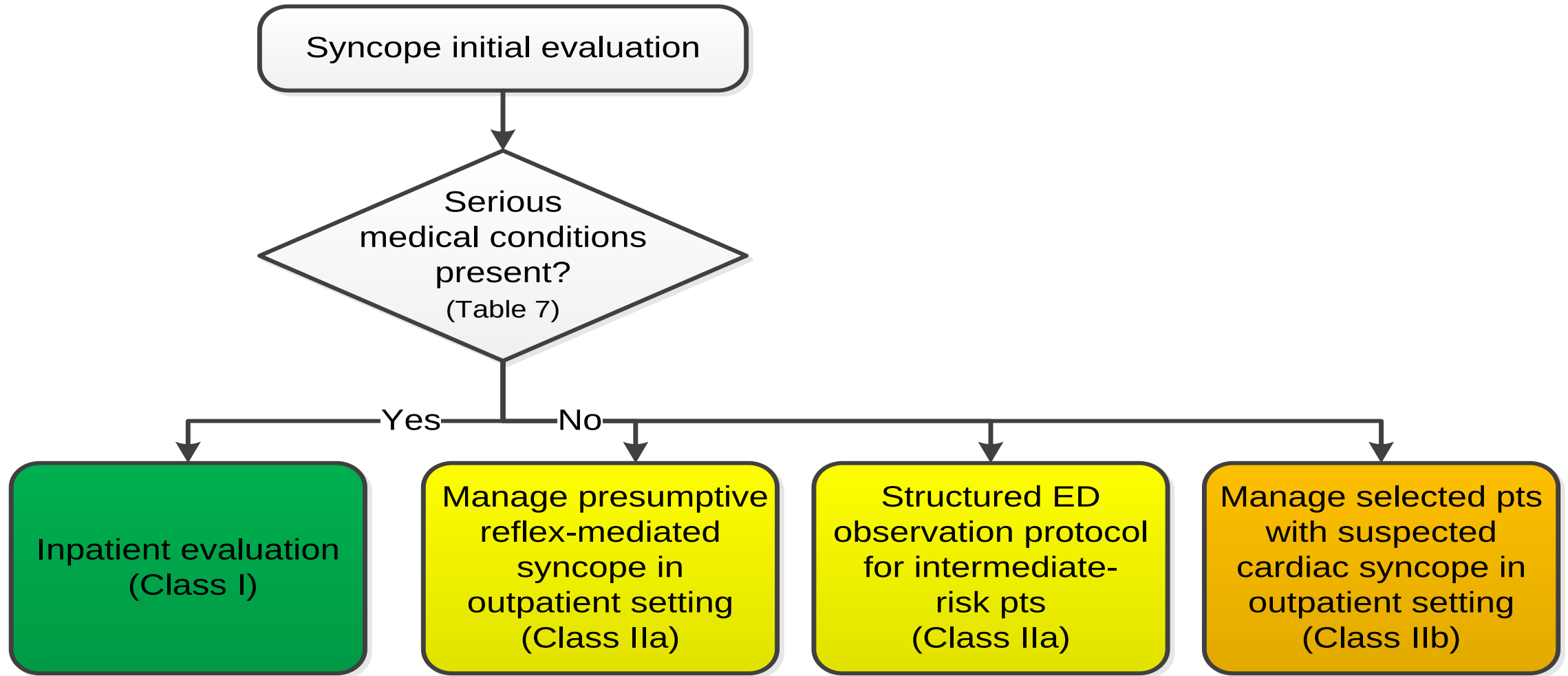
ACC Middle East
Conference 2017

Case Question 4

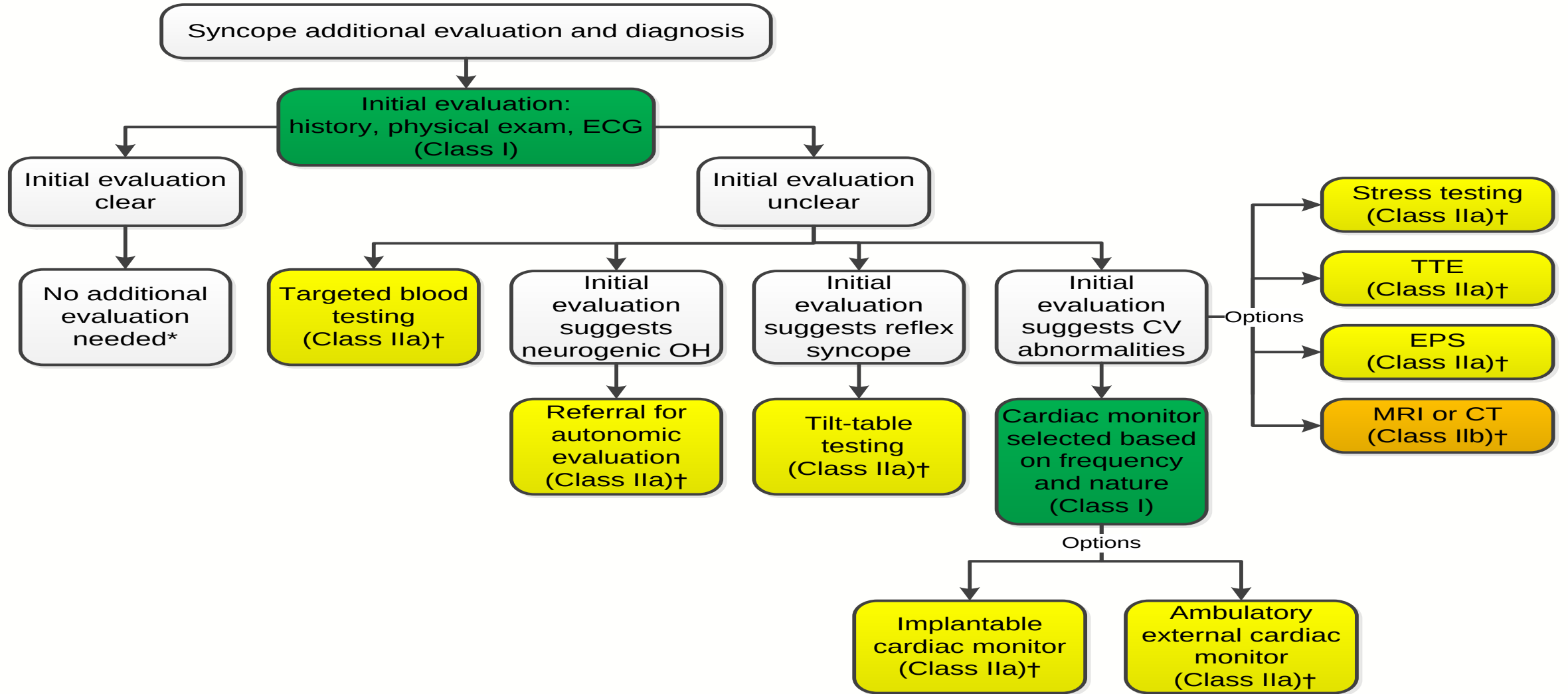
- What is the disposition of this patient?
- 1- Outpatient followup with an electrophysiologist
- 2- Inpatient admission and evaluation with telemetry for further evaluation
- 3- Discharge home with symptomatic treatment for URTI no followup needed
- 4- Monitor in ER for 24 hours then discharge if no further events



Patient Disposition After Initial Evaluation for Syncope



Additional Evaluation and Diagnosis



Blood Testing

COR	LOE	Recommendations
IIa	B-NR	Targeted blood tests are reasonable in the evaluation of selected patients with syncope identified on the basis of clinical assessment from history, physical examination, and ECG.
IIb	C-LD	Usefulness of brain natriuretic peptide and high-sensitivity troponin measurement is uncertain in patients for whom a cardiac cause of syncope is suspected.
III: No Benefit	B-R	Routine and comprehensive laboratory testing is not useful in the evaluation of patients with syncope.



Cardiac Imaging

COR	LOE	Recommendations
Ila	B-NR	Transthoracic echocardiography can be useful in selected patients presenting with syncope if structural heart disease is suspected.
Ilb	B-NR	CT or MRI may be useful in selected patients presenting with syncope of suspected cardiac etiology.
III: No Benefit	B-R	Routine cardiac imaging is not useful in the evaluation of patients with syncope unless cardiac etiology is suspected on the basis of an initial evaluation, including history, physical examination, or ECG.



Cardiac Monitoring

COR	LOE	Recommendations
I	C-EO	The choice of a specific cardiac monitor should be determined on the basis of the frequency and nature of syncope events.
IIa	B-NR	To evaluate selected ambulatory patients with syncope of suspected arrhythmic etiology, the following external cardiac monitoring approaches can be useful: 1. Holter monitor 2. Transtelephonic monitor 3. External loop recorder 4. Patch recorder 5. Mobile cardiac outpatient telemetry.
IIa	B-R	To evaluate selected ambulatory patients with syncope of suspected arrhythmic etiology, an ICM can be useful.



In-Hospital Telemetry

COR	LOE	Recommendation
I	B-NR	Continuous ECG monitoring is useful for hospitalized patients admitted for syncope evaluation with suspected cardiac etiology.



Electrophysiological Study

COR	LOE	Recommendations
IIa	B-NR	EPS can be useful for evaluation of selected patients with syncope of suspected arrhythmic etiology.
III: No Benefit	B-NR	EPS is not recommended for syncope evaluation in patients with a normal ECG and normal cardiac structure and function, unless an arrhythmic etiology is suspected.



Neurological and Imaging Diagnostics

COR	LOE	Recommendations
Ila	C-LD	Simultaneous monitoring of an EEG and hemodynamic parameters during tilt-table testing can be useful to distinguish among syncope, pseudosyncope, and epilepsy.
III: No Benefit	B-NR	MRI and CT of the head are not recommended in the routine evaluation of patients with syncope in the absence of focal neurological findings or head injury that support further evaluation.
III: No Benefit	B-NR	Carotid artery imaging is not recommended in the routine evaluation of patients with syncope in the absence of focal neurological findings that support further evaluation.
III: No Benefit	B-NR	Routine recording of an EEG is not recommended in the evaluation of patients with syncope in the absence of specific neurological features suggestive of a seizure.





Thank you!



ACC Middle East
Conference 2017