Syncope

Neurology Module
AFEM Core Curriculum



This presentation is part of the African Federation For Emergency Medicine Presentation Bank and was developed with open-source materials.



www.afem.info



This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/4.0/.



www.google.com



Syncope

- Self-limited loss of consciousness
 - Associated with loss of postural tone
 - Spontaneous return to baseline



Syncope

- Self-limited loss of consciousness
 - Associated with loss of postural tone
 - Spontaneous return to baseline

Presyncope is near loss of consciousness – managed as syncope



first five minutes



First five minutes

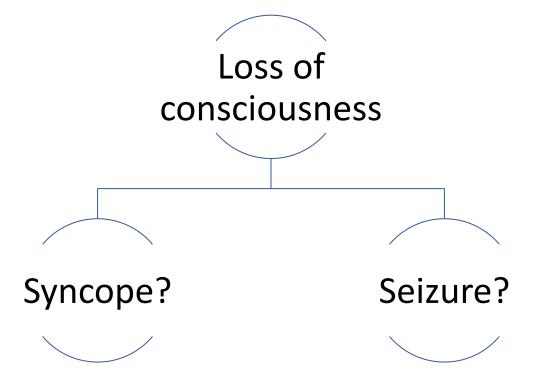
- ABC
- Vital signs inc oxygen saturation
- Cardiac monitor and ECG
- Blood Glucose



possible causes and differential diagnosis



Primary differential for syncope





Common pitfall

- Convulsive movements after syncope are common
- "Convulsions" do NOT always = seizure
- Seizure signs:
 - post-event confusion
 - tongue biting
 - history of seizure
 - incontinence

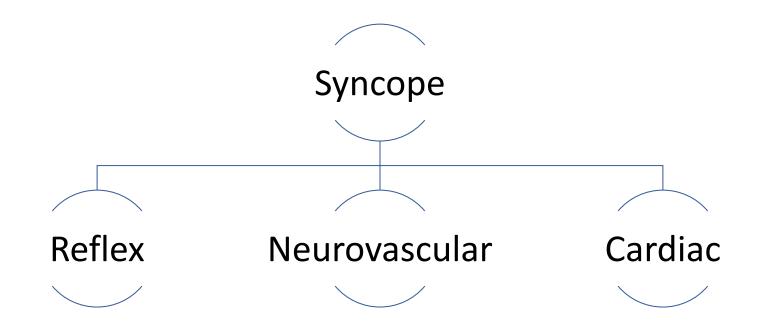


differential diagnoses that are NOT syncope

- Arrhythmia
- Congestive cardiac failure
- Metabolic
 - Hypoxia
 - Hypoglycaemia
 - Hypocapnia
- Intoxication
- Psychogenic

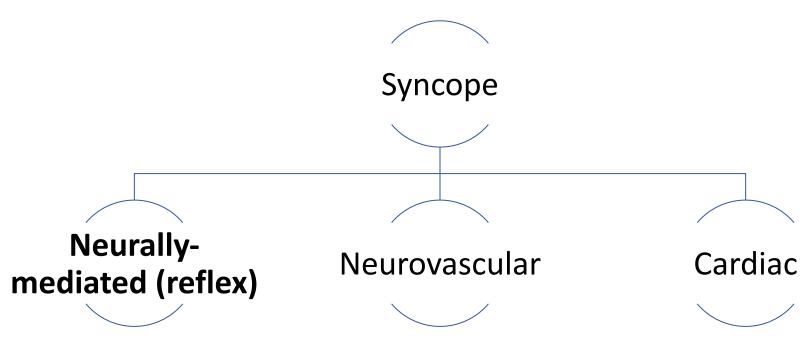


Syncope causes (a helpful framework)





Syncope causes (a helpful framework)





Neurally-mediated (reflex) syncope

- "Vasovagal"
- Situational
- Carotid sinus hypersensitivity

Sympathetic Increase of Hypoperfusion Sympathetic surge leads to vagal tone as of reticular Bradycardia, activation or brainstem well as Hypotension **SYNCOPE** vasodilation activating efferent sympathetic stimulous system response withdrawal



- 25-65% of syncope -- excellent prognosis
- Self-limited bradycardia/vasodilation causes transient hypotension



- 25-65% of syncope -- excellent prognosis
- Self-limited bradycardia/vasodilation causes transient hypotension
- Vasovagal: emotional distress/painful stimuli

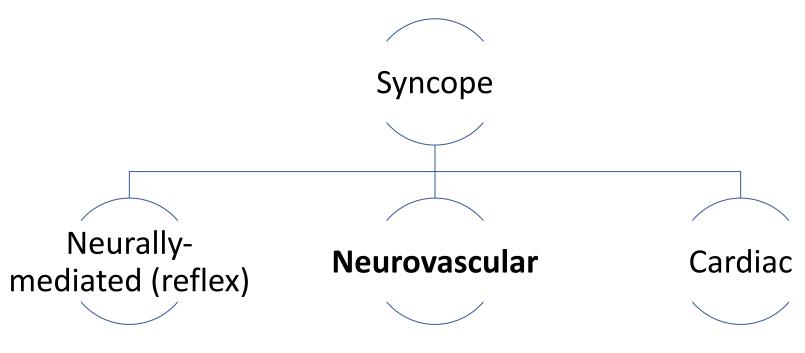


- 25-65% of syncope -- excellent prognosis
- Self-limited bradycardia/vasodilation causes transient hypotension
- Vasovagal: emotional distress/painful stimuli
- Situational: micturation, defecation, cough/sneeze, post-prandial



- 25-65% of syncope -- excellent prognosis
- Self-limited bradycardia/vasodilation causes transient hypotension
- Vasovagal: emotional distress/painful stimuli
- Situational: micturation, defecation, cough/sneeze, post-prandial
- Carotid sinus hypersensitivity: turning neck causes reflex syncope

Syncope causes (a helpful framework)





Neurovascular syncope:

- Bilateral cerebral hemisphere hypo-perfusion
 - Autonomic failure
 - Volume loss/orthostatic hypotension

Inability to get enough blood to the brain

Hypo-perfusion of the reticular activating system

SYNCOPE



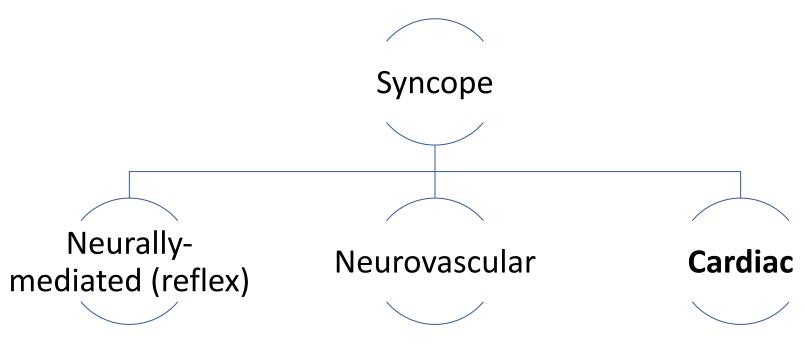
Neurovascular syncope:

Consider causes of volume loss from:

- Dehydration
- Ectopic pregnancy
- GI bleed



Syncope causes (a helpful framework)





• Often life-threatening, "can't miss" diagnoses



Often life-threatening, "can't miss" diagnoses

Dysrhythmia

• Bradycardia, tachycardia



Often life-threatening, "can't miss" diagnoses

Dysrhythmia

• Bradycardia, tachycardia

Structural

• Valvular disease, failure, acute infarct, tamponade, congenital disease



Often life-threatening, "can't miss" diagnoses

Dysrhythmia

Bradycardia, tachycardia

Structural

Valvular disease, failure, acute infarct, tamponade, congenital disease

Increase in afterload

Pulmonary HTN, pulmonary embolism, hypertrophic cardiomyopathy

history and physical exam



- Nausea, tunnel vision, diaphoresis?
- Reflex or Vasovagal



- Nausea, tunnel vision, diaphoresis?
- Chest pain?

- Reflex or Vasovagal
- Ischaemia or Aortic stenosis



- Nausea, tunnel vision, diaphoresis?
- Chest pain?
- Dyspnea?

- Reflex or Vasovagal
- Ischaemia or Aortic stenosis
- Pulmonary embolism



- Nausea, tunnel vision, diaphoresis?
- Chest pain?
- Dyspnea?
- Headache?

- Reflex or Vasovagal
- Ischaemia or Aortic stenosis
- Pulmonary embolism
- Subarachnoid hemorrhage



- Nausea, tunnel vision, diaphoresis?
- Chest pain?
- Dyspnea?
- Headache?
- Sudden syncope with no warning?

- Reflex or Vasovagal
- Ischaemia or Aortic stenosis
- Pulmonary embolism
- Subarachnoid hemorrhage
- Dysrhythmia



Other crucial history

- Activity just prior to syncope
 - Exertion? Standing? Emotional distress? Sitting or lying?
- Medications
 - New med? Change in meds? Herbal or traditional meds? QTc prolonging?
- Structural heart disease, Dysrhythmias, Prior syncope
- Family history of sudden cardiac death
 - Especially at young age or during exertion
- Post-syncope symptoms
 - Headache, chest pain, abdominal pain, dyspnea, etc.



Signs and symptoms

- VS: Bilateral upper extremity blood pressure and pulse
- Cardiopulmonary
- Neck

- Rectal
- Oral
- Abdominal



Signs and symptoms

- VS: Bilateral upper extremity blood pressure and pulse
 - Unequal in subclavian steal/aortic dissection
- Cardiopulmonary
 - Murmurs in critical AS, HCM
- Neck
 - JVD: PE/tamponade
 - Meningismus: SAH
 - Bruits: cerebrovascular disease
- Rectal
 - Consider GI bleed, melena
- Oral
 - Tongue bites suggests seizure
- Abdominal
 - Pulsatile abdominal mass: AAA
 - Peritonitis: ectopic pregnancy



investigations



Investigations

- Testing depends on clinical picture
- ECG if possible
- Urine pregnancy test
- Haematocrit/Hemoglobin
- Electrolytes
- Cardiac enzymes



management



Management

Goal of acute management is to recognize and manage life-threats

- Differentiate from mimics, primarily seizure
- Rehydration trial if suspect dehydration



Management

High-risk indicators accompanying syncope

(further testing and/or admission/transfer may be indicated):

- Abnormal ECG
- History of dysrhythmia, structural heart disease, CHF
- SBP < 90
- Hgb <10</p>
- Old age, comorbidities, pregnancy
- Family history of sudden death
- Exertional syncope (SAH, HOCM)



disposition



Disposition

Admit or Transfer for higher level care

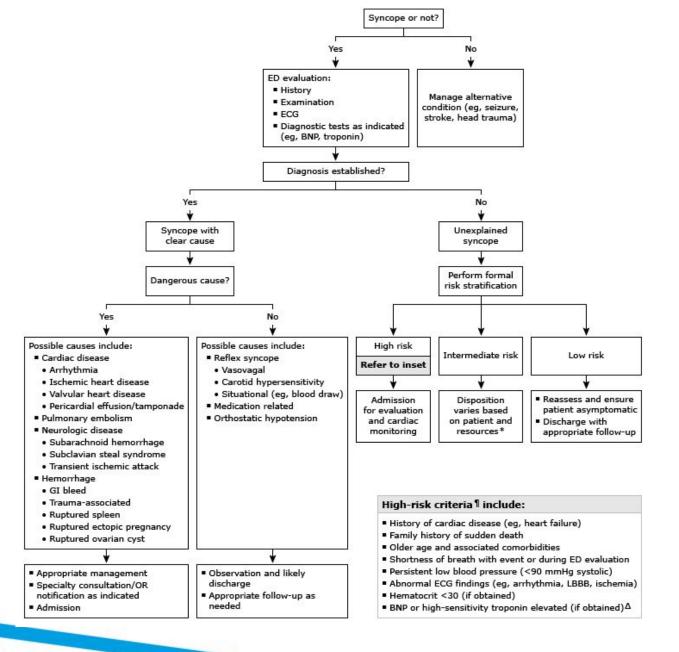
- Severe structural or coronary heart disease
- Concern for dysrhythmia:
 - Exertional, supine syncope, no prodrome, palpitations, family hx of sudden death
 - •
 - Concerning ECG findings
 - VT, Brugada, ischaemia, AV block, sinus pause, ARVC patter, HOCM pattern

Disposition

Discharge for outpatient follow up

- Absence of heart disease and story consistent with reflex syncope
 - Typical prodrome
- Young, non-exertional, no cardiac disease, no family history of sudden death and normal ECG
- Clear non life-threatening cause found







Neurology Module
AFEM Core Curriculum







Rapid Assessment Protocol AFEM Keystone Module



This presentation is part of the African Federation for Emergency Medicine Presentation Bank and was developed with open-source materials.



www.afem.info



This work is licensed under the Creative Commons
Attirbution-ShareAlike 4.0 International License. To view a copy
of this licence, visit
http://creativecommons.org/licenses/by-sa/4.0/.

Objectives

 Understand how to use appropriate Rapid Sequence Protocol for adults presenting with syncope



Case

- 22 yro female student
- Fell down 5 times during basketball matches in the last 1 week
- Vitals: Temp 36.2°C, SPO₂
 98%, BP 120/75, RR 14, HR
 78

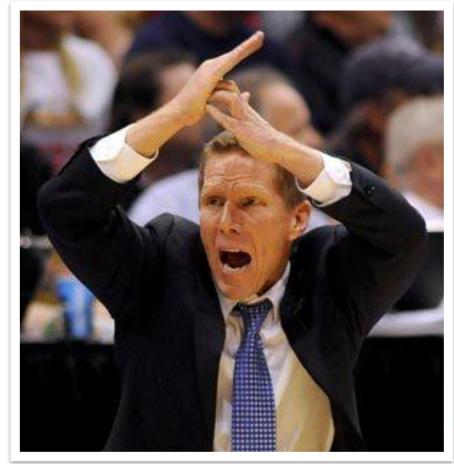
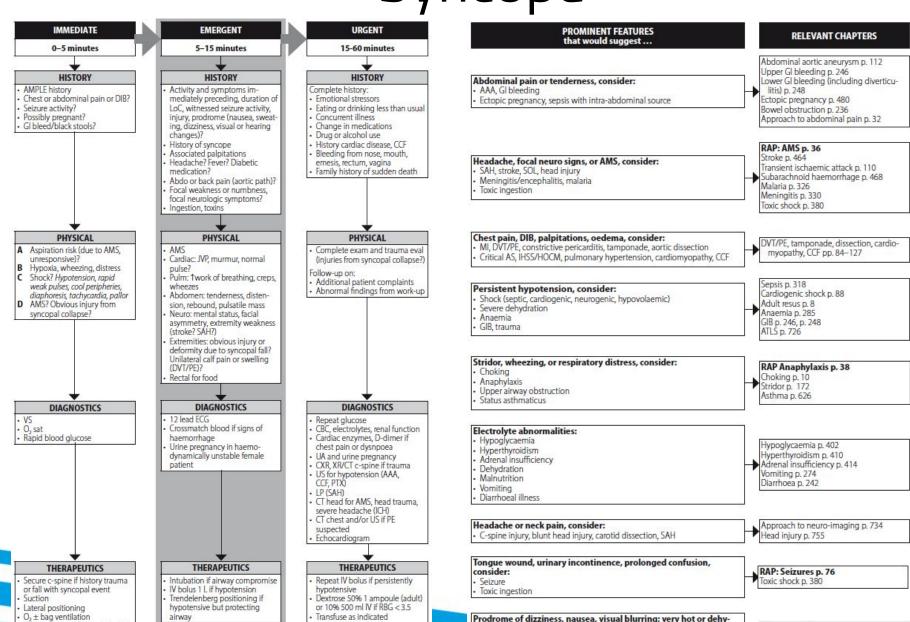


Image courtesy of James Roh for the Seattle Times

Which RAP and why?





drated; emotional stressors; consider:

Vasovagal syncope

Heat-associated illness

Syncope p. 454 Heat-associated illness p. 202

Treat arrhythmias

Dextrose 50% 1 ampoule (adult),

dextrose 10% 5 ml/kg (paediat-

ric) if RBG < 3.5

IMMEDIATE 0 – 5 min

- History
- Physical
- Diagnostics
- Therapeutics



IMMEDIATE 0-5 minutes $\overline{}$ HISTORY AMPLE history Chest or abdominal pain or DIB? Seizure activity? Possibly pregnant? GI bleed/black stools? PHYSICAL Aspiration risk (due to ΔMS , A Aspiration risk (due to AMS, unresponsive)? B Hypoxia, wheezing, distress Shock? Hypotension, rapid weak pulses, cool peripheries, diaphoresis, tachycardia, pallor D AMS? Obvious injury from syncopal collapse? DIAGNOSTICS · VS · O, sat · Rapid blood glycose THERAPEUTICS Secure c-spine if history trauma or fall with syncopal event Suction Lateral positioning O₂ ± bag ventilation Dextrose 50% 1 ampoule (adult), dextrose 10% 5 ml/kg (paediatric) if RBG ≤ 3.5



What is your one-sentence case summary at 5 minutes?



EMERGENT 5 – 15 min

- History
- Physical
- Diagnostics
- Therapeutics



HISTORY Activity and symptoms immediately preceding, duration of LoC, witnessed seizure activity, injury, prodrome (nausea, sweating, dizziness, visual or hearing changes)? History of syncope Associated palpitations Headache? Fever? Diabetic medication? Abdo or back pain (aortic path)? Focal weakness or numbness, focal neurologic symptoms? gesti AMS Cardiac: JVP, murmur, normal Pulm: Twork of breathing, creps, wheezes Abdomen: tenderness, distension, rebound, pulsatile mass Neuro: mental status, facial asymmetry, extremity weakness (stroke? SÁH?) Extremities: obvious injury or deformity due to syncopal fall? Unilateral calf pain or swelling (DVT/PE)? Rectal for food 12 lead ECG Crossmatch blood if signs of haemorrhage Urine pregnancy in haemo-dynamically unstable female patient **THERAPEUTICS** Intubation if airway compromise IV bolus 1 L if hypotension Trendelenberg positioning if

hypotensive but protecting

airway



What is your one-sentence case summary at 15 minutes?



URGENT 15 – 60 min

- History
- Physical
- Diagnostics
- Therapeutics



URGENT HISTORY Complete history: Emotional stressors Eating or drinking less than usual Concurrent illness Change in medications Drug or alcohol use History cardiac disease, CCF Bleeding from nose, mouth, emesis, rectum, vagina Family history of sudden death **PHYSICAL** Complete exam and trauma eval (injuries from syncopal collapse?) Follow-up on: Additional patient complaintsAbnormal findings from work-up DIAGNOSTICS Repeat glucose CBC, electrolytes, renal function Cardiac enzymes, D-dimer if chest pain or dysnpoea UA and urine pregnancy CXR, XR/CT c-spine if trauma US for hypotension (AAA, CCF, PTX) LP (SAH) CT head for AMS, head trauma, severe headache (ICH) CT chest and/or US if PE suspected **Schocardiogram** Repeat IV bolus if persistently hypotensive Dextrose 50% 1 ampoule (adult) or 10% 500 ml IV if RBG < 3.5 Transfuse as indicated Treat arrhythmias

Fédération Africaine de Médecine d'Urgence

PROMINENT FEATURES RELEVANT CHAPTERS that would suggest ... Abdominal aortic aneurysm p. 112 Upper GI bleeding p. 246 Abdominal pain or tenderness, consider: Lower GI bleeding (including diverticu-AAA, GI bleeding litis) p. 248 Ectopic pregnancy, sepsis with intra-abdominal source Ectopic pregnancy p. 480 Bowel obstruction p. 236 Approach to abdominal pain p. 32 RAP: AMS p. 36 Stroke p. 464 Headache, focal neuro signs, or AMS, consider: Transient ischaemic attack p. 110 Subarachnoid haemorrhage p. 468 SAH, stroke, SOL, head injury Meningitis/encephalitis, malaria Malaria p. 326 Toxic ingestion Meningitis p. 330 Toxic shock p. 380 Chest pain, DIB, palpitations, oedema, consider: DVT/PE, tamponade, dissection, cardio-MI, DVT/PE, constrictive pericarditis, tamponade, aortic dissection myopathy, CCF pp. 84-127 Critical AS, IHSS/HOCM, pulmonary hypertension, cardiomyopathy, CCF Sepsis p. 318 Persistent hypotension, consider: Cardiogenic shock p. 88 Shock (septic, cardiogenic, neurogenic, hypovolaemic) Adult resus p. 8 Severe dehydration Anaemia p. 285 Anaemia GIB p. 246, p. 248 GIB, trauma ATLS p. 726 Stridor, wheezing, or respiratory distress, consider: RAP Anaphylaxis p. 38 Choking Choking p. 10 Anaphylaxis Stridor p. 172 Upper airway obstruction Asthma p. 626 Status asthmaticus Electrolyte abnormalities: Hypoglycaemia Hypoglycaemia p. 402 Hyperthyroidism Hyperthyroidism p. 410 Adrenal insufficiency p. 414 Adrenal insufficiency Dehydration Vomiting p. 274 Malnutrition Diarrhoea p. 242 Vomiting Diarrhoeal illness Headache or neck pain, consider: Approach to neuro-imaging p. 734 Head injury p. 755 C-spine injury, blunt head injury, carotid dissection, SAH Tongue wound, urinary incontinence, prolonged confusion, consider: RAP: Seizures p. 76 Toxic shock p. 380 Seizure Toxic ingestion Prodrome of dizziness, nausea, visual blurring; very hot or dehy-Syncope p. 454 Heat-associated illness p. 202 drated; emotional stressors; consider: Vasovagal syncope Heat-associated illness

Fédération Africaine de Médecine d'Orgence

Case

- 22 yro female student
- Fell down 5 times during basketball matches in the last 1 week
- Vitals: Temp 36.2°C, SPO₂
 98%, BP 120/75, RR 14, HR
 78

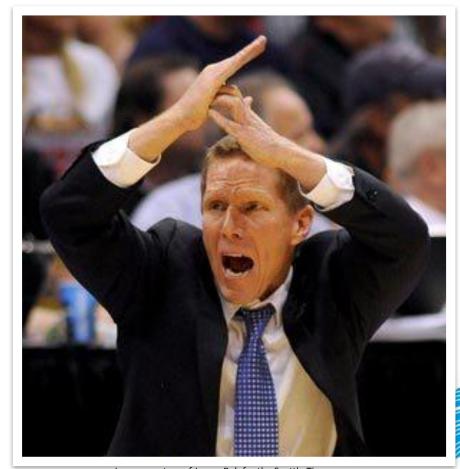


Image courtesy of James Roh for the Seattle Times

Syncope: Definition

Transient

Self-limiting LOC

Loss of postural tone



- History:
 - Pre-event
 - Event
 - Post-event
 - Family history
 - CVS history, dysrhythmias
 - Medications



- Examination:
 - BP, pulses
 - CVS
 - Neuro (CVA, SAH)
 - Abdo (AAA, ectopic)
 - Neck (stenosis)
 - Metabolic (glucose, sats)
 - Reflexes



- Investigations:
 - Glucose
 - Pregnancy test
 - Hb / Haematocrit
 - ECG
 - ? CT brain



- Manage the cause
- High risk factors:
 - Abnormal ECG
 - SBP < 90
 - SOB
 - Hb < 10
 - Hx of heart disease
 - Old age
 - Family hx
 - Exertional



What is your final 1 – 2 minute handover case summary?

