



**Jefferson**

Philadelphia University +  
Thomas Jefferson University

# CDU Curriculum: SYNCOPÉ

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A 1744 oil painting by [Pietro Longhi](#) called *Fainting*

# Epidemiology of Syncope

- Syncope accounts for 1-3% of all emergency department visits
- Syncope accounts for 6% of all hospitalizations.
- Nearly  $\frac{1}{4}$  of the population experience syncope during their lifetime.
- Approximately  $\frac{1}{3}$  of all syncope visits result in hospitalization.

# Syncope Defined

- Transient loss of postural tone and consciousness due to cerebral hypoperfusion



# Causes of Syncope

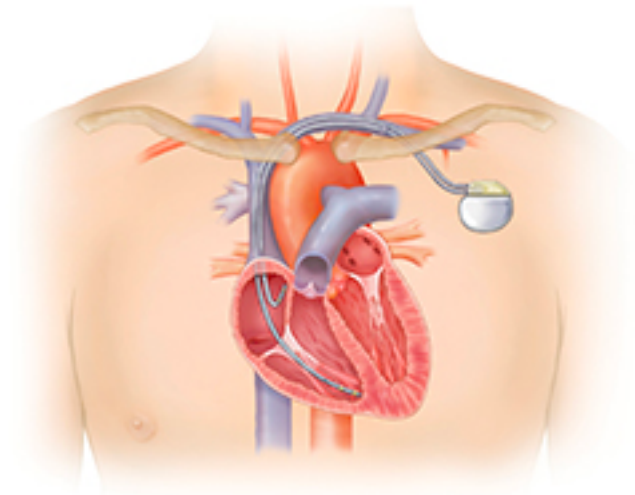
- Cardiovascular
  - Electrical
  - Structural
- Neurologic
  - Vasovagal
  - Cerebral perfusion
- Orthostatic
  - Vasovagal
  - Cerebral perfusion

# Causes of Syncope

- Cardiovascular

- Electrical

- [WPW](#)
    - [Long QT Syndrome](#)
    - [Brugada Syndrome](#)
    - [2nd/3rd AV Block](#)
    - [Afib/aflutter](#)
    - [Vtach/torsades](#)
    - [Sick sinus syndrome](#)
    - [Arrhythmogenic right ventricular dysplasia](#)



# Causes of Syncope

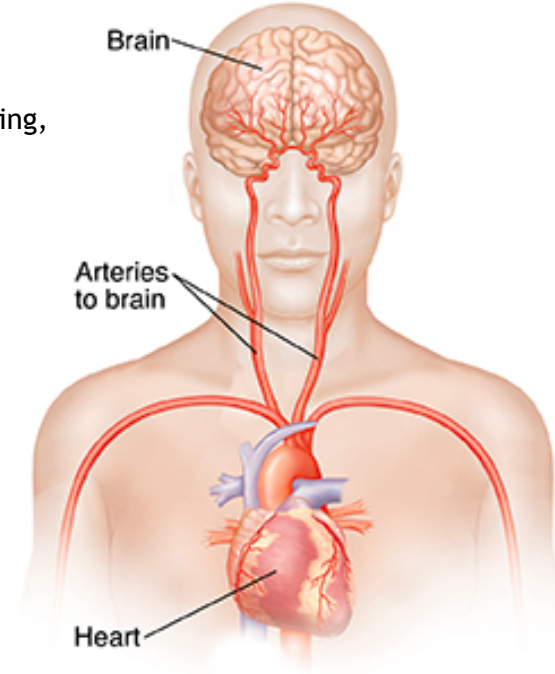
- Neurologic

- Vasovagal:
  - Fear, pain, emotion, valsalva, [breath-holding spell](#)
  - [Coughing](#), micturition, defecation, [vomiting](#), swallowing, postexercise
  - Carotid sinus stimulation
  - Autonomic dysreflexion
- Cerebral perfusion:
  - Stroke
  - SAH
  - TIA
  - Vertebrobasilar insufficiency
  - Orthostatic:

- Orthostatic

Volume depletion:

- [Dehydration](#) ([vomiting](#), [diarrhea](#))



## Syncope Work up

Consider work up based on symptoms:

ECG

CBC

BMP

Troponin

CXR

Orthostatics

# Risk stratification of Syncope

## Canadian Syncope Risk Score ☆

Predicts 30-day serious adverse events in patients presenting with syncope.

### INSTRUCTIONS

Applicable to patients  $\geq 16$  years old presenting  $\leq 24$  hours of syncope. Do not use if: prolonged ( $> 5$  min) LOC, change in mental status from baseline, obvious witnessed seizure, major trauma, intoxication, language barrier, or head trauma causing LOC. This calculator is externally validated, according to data presented at the Society for Academic Emergency Medicine Annual Meeting 2018.

When to Use ▼

Pearls/Pitfalls ▼

Why Use ▼

Predicts risk of 30-day serious adverse events associated with syncope, defined as any of the following: death, arrhythmia, non-arrhythmic cardiac causes, or non-cardiac causes

# Risk stratification

|   |  |        |
|---|--|--------|
| Predisposition to vasovagal symptoms<br>Triggered by being in a warm crowded place,<br>prolonged standing, fear, emotion, or pain | No 0   | Yes -1 |
| Predisposition to vasovagal symptoms<br>Triggered by being in a warm crowded place,<br>prolonged standing, fear, emotion, or pain | No 0   | Yes -1 |
| Heart disease history<br>CAD, atrial fibrillation or flutter, CHF, valvular<br>disease  | No 0   | Yes +1 |
| <a href="#">sBP</a> <90 or >180 mmHg<br>On any reading  | No 0   | Yes +2 |
| Elevated troponin<br>>99th percentile of normal population  | No 0   | Yes +2 |
| Abnormal QRS axis<br><-30° or >100°   | No 0   | Yes +1 |
| QRS duration >130 ms  | No 0   | Yes +1 |
| <a href="#">Corrected QT interval</a> >480 ms   | No 0   | Yes +2 |
| ED diagnosis<br>Based on ED evaluation  | <div>Vasovagal syncope -2</div> <div>Cardiac syncope +2</div> <div>Neither 0</div> |        |

# Syncope Order set



## Order Sets

### Search Results

☒ OBS J CDU Syncope

#### Orders

Clear All Orders

 OBS J CDU Syncope 

#### General

▶ Admission Status Click for more

▶ Code Status Click for more

#### ▼ Diet and Nutrition

- ☐ Diet  
Diet effective now
- ☐ Diet with Supplement Panel
- ☐ NPO  
Diet effective now
- ☐ NPO at Midnight Panel
- ☐ Tube Feed without Tray  
Diet effective now, Routine
- ☐ Tube Feed with Tray Panel

#### ▼ Activity

- ☐ OOB; Ad lib; Ambulate/VTE Prevention; 5-10 minutes TID  
Ongoing, Routine
- ☐ OOB; With assistance; Ambulate/VTE Prevention; 5-10 minutes TID  
Ongoing, Routine
- ☐ Bedrest

#### ▼ Nursing



##### ▼ Vital Signs

- ☒ Vital Signs: Q4H SCH  
Every 4 hours scheduled, First occurrence today at 1200, As Scheduled
- ☒ Pulse Oximetry Q4H SCH Notify provider if pulse ox less than: 94 %  
Every 4 hours scheduled, First occurrence today at 1200, As Scheduled, Routine  
Notify provider if pulse ox less than: 94 %

##### ☒ Cardiac Monitoring Panel

##### ☒ Cardiac Monitoring by Protocol

Ongoing, Starting today at 0907, Until Specified, Routine

  Protocol Document: \\tjh.tju.edu\Epic\prod-shares\internal\Orders\_Protocol\CARDIAC MONITORING BY PROTOCOL - TJU\NUR436 Clinical Protocol 2-041 approval date 10 14 2019.pdf

☐ May Travel Unmonitored

☐ Orthostatic Vital Signs  
Once, Routine, BP and HR

##### ▼ Notify Provider

- ☐ Notify Provider for the following parameters:  
PRN, Routine
- ☐ Notify Provider For  
Routine, PRN

##### ▼ Nursing Communication

☐ Nursing Communication

# Syncope Order set

## ▼ Nursing Interventions

- ☐ Insert and Maintain IV
- ☐ Patient Teaching  
Ongoing, Routine

## ▼ Labs


### ▼ Chemistry Basic

- ☐ Basic Metabolic Panel  
Once
- ☐ Magnesium  
Once
- ☐ Phosphorus  
Once

### ▼ Cardiac

Change start time of lab draw to coincide with the time the lab was drawn in the ED.

#### ☒ Troponin T hs (Gen 5)

 Add to specimen collected 4h ago?  
Once, today at 0907, For 1 occurrence  
New collection, Blood, Venous

### ▼ Hematology

- ☐ Complete Blood Count (CBC)  
Once

## ▼ Imaging

### ▼ Cardiac Imaging

- ☐ Transthoracic Echo (TTE) Complete

## ▼ Other Tests

### ▼ Cardiac Studies

- ☐ ECG 12 lead  
Once, Routine

## ▼ VTE Prophylaxis

### ▶ VTE Risk Assessment

[Click for more](#)

### ▼ VTE Prophylaxis - Pharmacologic

- ☐ High Risk VTE - Pharmacologic
- ☐ Moderate Risk VTE - Pharmacologic
- ☐ No Pharmacologic VTE Prophylaxis:  
Ongoing for 48 hours, Routine

### ▶ VTE Prophylaxis - Mechanical

[Click for more](#)

## ▼ IV Fluids

### ▼ IV Fluid Boluses

- ☐ sodium chloride 0.9 % IV bolus (\$2.00)  
1,000 mL, intravenous, Once, Reassess orthostatic vital signs 30 minutes after completion of bolus

### ▼ IV Fluid Infusions

- ☐ sodium chloride 0.9 % infusion (\$2.00)



# Syncope Order set

## ▼ IV Fluid Infusions

- ☐ sodium chloride 0.9 % infusion (\$2.00)  
80 mL/hr, intravenous, Continuous
- ☐ sodium chloride 0.45 % infusion (\$2.00)  
80 mL/hr, intravenous, Continuous
- ☐ dextrose 5 %-0.45 % sodium chloride infusion (\$2.00)  
80 mL/hr, intravenous, Continuous

## ▼ Medications

### ▼ Analgesics - Mild Pain

- ☐ acetaminophen (TYLENOL) tablet (\$0.04)  
650 mg, oral, Every 4 hours PRN, mild pain (pain scale 1-3/10)

### ▼ Analgesics - Moderate Pain

- ☐ ibuprofen (ADVIL, MOTRIN) tablet (\$0.08) ⓘ  
600 mg, oral, Every 6 hours PRN, moderate pain (pain scale 4-6/10)

### ▼ Influenza Vaccine

Influenza vaccine is indicated for all patients aged 6 months or more during the months of October through March.

#### - Influenza (Flu) and Pneumococcal Vaccination Assessment

- ☐ influenza virus vaccine (inactivated, quadrivalent) (FLUZONE, FLULAVAL, FLUARIX, FLUCELVAX) injection (\$52)  
intramuscular, During hospitalization
- ☐ Reason for not administering Influenza Vaccine

## ▼ Pneumococcal Vaccine

Indications requiring Pneumococcal vaccine:

| Both Pneumovax 23 AND Prevnar 13  | Only Pneumovax 23   |
|---|---|
| All adult patients 65 years or older  | Diabetes Mellitus   |
| Nephrotic Syndrome  | Chronic Cardiovascular Disease  |
| Chronic Renal Disease   | Chronic Pulmonary Disease (COPD, or asthma)   |
| HIV   | Chronic Liver Disease   |
| Asplenia  | Alcoholism  |
| Sickle Cell Disease   | Nursing home or long term care resident   |
| Immunosuppressive conditions (leukemia, lymphoma, multiple myeloma, congenital immunodeficiency, Hodgkins disease, generalized malignancy, organ or one marrow transplantation, chemotherapy with alkylating agents, antimetabolites, high dose long term steroids) | Persons who smoke cigarettes<br><b>AND</b><br>Not previously vaccinated with Pneumo |
| Cerebrospinal fluid leak  |   |
| Cochlear implant surgery  |   |

- When BOTH Pneumovax 23 and Prevnar 13 are indicated, the vaccines should not be administered simultaneously.
- If BOTH vaccines are indicated, give Prevnar 13 this hospital stay if patient has never received it and if Pneumovax 23 has not been given within the past year. Otherwise, give Pneumovax 23 if Prevnar 13 was administered more than 8 weeks ago.
- If ONLY Pneumovax 23 is indicated, give if vaccine naïve, or if greater than 5 years since last dose and initial dose was given when patient was less than 64 years old, and if Prevnar 13 was administered more than 8 weeks ago.

#### - - Influenza (Flu) and Pneumococcal Vaccination Assessment

- ☐ pneumococcal polysaccharide (PNEUMOVAX 23) 25 mcg/0.5 mL vaccine (\$92)  
intramuscular, During hospitalization
- ☐ pneumococcal conjugate (PREVNAR 13) 0.5 mL vaccine (\$180)  
intramuscular, During hospitalization
- ☐ Reason for not administering pneumococcal vaccine ⓘ

## ▼ Consults

### ► Consults

[Click for more](#)

## ▼ Additional SmartSet Orders

 Search

You can search for an order by typing in the header of this section.

## Patient's appropriate for CDU post syncope

- Consider CDU admission for syncope work up for patient's who are at low risk for adverse outcomes based on history, physical, risk factors, and scoring systems such as the Canadian Syncope Risk Score.

| OK                               | NOT OK                              |
|----------------------------------|-------------------------------------|
| EKG without significant.         | Abnormal or evolving EKG            |
| Stable vital signs               | Unstable vitals                     |
| No recurring syncopal episodes   | Recurring syncopal episodes         |
| Return to baseline mental status | Altered mental status from baseline |

# Typical CDU Syncope Plan

## Typical Observation Management

- Review ED diagnostic tests, lab work, and imaging for final results
- Monitor vital signs per floor protocol
- Neuro checks every 4 hours
- Telemetry
- Imaging to consider (ECHO/CThead/CTchest)
- Medications as per consultant recommendations
- Home care coordination as needed

## Hospital Admission

- Abnormal imaging requiring hospitalization.
- EKG/telemetry with changes or evolution.
- Unstable vital signs, suspect SIRS or sepsis.
- Altered mental status
- LOS exceeding 23 hours



# Consults to consider

- Cardiology
  - Pt's with suspected cardiac cause based on history/labs.
  - Pt's with significant cardiac risk factors.
  - Pt's with abnormal ECHO/ECG.
  - Pt's with cardiac devices which need interrogation.
- PT/OT
  - Pt's with mechanical mechanism or ambulatory dysfunction.
- Social Work
  - Pt's with needs for placement based on inability to care for oneself

# Disposition

- Disposition from the CDU for patient's with stable vital signs, no recurrence of syncope, reassuring labs imaging, clinical improvement, and ability for close follow up.
- Secure follow up with appropriate providers.
- Make appropriate adjustments discharge medication list, with special considerations for medications that may play a role in pt's syncope/pre-syncope.

# Syncope Treatment

- Definitive treatment is based on etiology of syncope
  - If cardiac etiology, work with cardiology for best management plan.
  - If Neurologic etiology, work with neurology/neurosurgery for management.
  - If Orthostatic or hypovolemic, assess orthostatic vitals, replenish volume with IV fluids as needed, scrutinize medication list for potential causes.

# References

- Thiruganasambandamoorthy, V et al. Development of the Canadian Syncope Risk Score to predict serious adverse events after emergency department assessment of syncope. CMAJ. 2016 Sep 6;188(12):E289-E298.
- D'Ascenzo F, Biondi-Zoccai G, Reed M, et al. Incidence, etiology and predictors of adverse outcomes in 43,315 patients presenting to the emergency department with syncope: an international meta-analysis. Int J Cardiol. 2013;167(1)57-62.
- Brignole M, Moya A, de Lange FJ, Deharo JC, Elliott PM, Fanciulli A, Fedorowski A, Furlan R, Kenny RA, Martín A, Probst V, Reed MJ, Rice CP, Sutton R, Ungar A, van Dijk JG; ESC Scientific Document Group. 2018 ESC Guidelines for the diagnosis and management of syncope. Eur Heart J. 2018 Jun 1;39(21):1883-1948. doi: 10.1093/eurheartj/ehy037. PMID: 29562304.
- Tintinalli's Emergency Medicine Manual, 8th ed., McGraw Hill Education, 2018.



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