# F01: Altered Levels of Consciousness

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## Introduction

Altered level of consciousness is a common out-of-hospital emergency. Paramedics and EMRs/FRs are frequently faced with patients exhibiting changes to their baseline consciousness, ranging from unconsciousness to hyperarousal. The underlying causes are varied and numerous. Some of these conditions are relatively benign while others are rapidly lethal. Differentiating between these, in the out-of-hospital environment, can be extremely difficult. In assessing and caring for these patients, paramedics and EMRs/FRs should focus on broad goals, such as maintaining a patent airway, supporting oxygenation, ventilation, and circulation. Acknowledging and treating potentially reversible causes must be considered throughout.

## Essentials

- Regardless of the underlying cause, patients with altered levels of consciousness are at high risk of functional airway obstruction and hypoxia. Management of oxygenation and ventilation must take priority over a search for potentially reversible causes.
- Syncope should be considered a diagnosis of exclusion. Paramedics and EMRs/FRs must look for reversible or life-threatening causes of unconsciousness and rule these out prior to considering syncope as the cause of the altered level of consciousness.
- The search for reversible causes should be conducted systematically. A number of mnemonics exist to guide paramedics and EMRs/FRs in their investigations. Regardless of which tool is used, paramedics and EMRs/FRs should consider, at a minimum:
  - Alcohol and intoxicants
  - Epilepsy, endocrine (hypoglycaemia), electrolytes
  - Insulin
  - Overdoses, accidental or intentional
  - Underdosing of medication or uremia
  - Trauma
  - Infection
  - Psychosis
  - Sepsis, shock, stroke
  - Hypotension
  - Hypoxia
  - Hypo or hyperthermia
- If a potentially reversible cause is found, refer to the appropriate CPG for management details.

## Additional Treatment Information

- All patients with an altered level of consciousness require comprehensive monitoring, including blood glucose measurements, temperature, and a 12-lead ECG.
- Complete a physical exam with specific attention to lateralizing neurological symptoms,
- Patients who have regained consciousness must have a FAST-VAN assessment performed.

## Referral Information

Patients who experience syncope are often inclined to refuse service. The diagnostic tests required to safely include or exclude potential causes of syncope or transient loss of consciousness are not available in the out-of-hospital environment. Paramedics and EMRs are expected to follow the appropriate guidelines with respect to these refusals.

## General Information

- Syncope is a clinical syndrome in which a transient loss of consciousness is caused by a period of diminished cerebral blood flow. By definition, the duration of the event is usually brief with a spontaneous to normal baseline consciousness. Recovery from syncope is usually rapid and complete with episodes rarely lasting more than a minute or two. Syncope can also be a sign of a potentially serious and life threatening condition. Some patients experience syncope without warning. They lack pre-syncope signs or symptoms and experience a sudden collapse followed immediately by a return to normal mental status. Paramedics and EMRs/FRs should consider these patients to have suffered from a cardiac dysrhythmia until proven otherwise, regardless of vital signs or ECG findings.
- Immediately life-threatening causes of syncope or unconsciousness include:
  - Cardiac dysrhythymias with or without associated ischemia
    - → C01: Acute Coronary Syndrome
    - → C02: Bradycardia
    - → C03: Narrow Complex Tachycardia
    - → C04: Wide Complex Tachycardia
  - Structural heart disease (outflow obstruction or cardiomyopathy)
  - Hypovolemia from occult hemorrhage
    - → D01: Shock
    - → D02: Bleeding
  - Hypotensive distributive shock
  - Pericardial tamponade
  - Pulmonary embolism resulting in obstructive shock
    - → C06: Pulmonary Embolism
  - Hypoglycemia
    - → E01: Hypoglycemia and Hyperglycemia
  - Heat exhaustion and stroke
    - → I02: Hyperthermia
  - Cerebrovascular accidents including TIAs and subarachnoid hemorrhage
    - → F03: Stroke
  - Toxicity from anticonvulsants, beta blockers, calcium channel blockers, benzodiazepines, or narcotic analgesics
    - → J01: Approach to Toxic Exposures
    - → J07: Beta Blockers
    - → J09: Calcium Channel Blockers
    - → J12: Opioids
- Some patients experience syncope without warning. They are devoid of any pre-syncope signs or symptoms and experience a sudden collapse followed immediately by a return to normal mental status. This type of syncope should be considered to be from a cardiac dysrhythmia until proven otherwise, even if the vital signs are normal upon arrival on scene.
- Loss of postural tone is inevitable with a loss of consciousness, resulting in a collapse that can cause traumatic injuries. Longer periods of real or apparent loss of consciousness suggest either an alternative cause, or a concurrent injury that prolongs the syncopal event.
- Patients can have symptoms associated with syncope without loss of consciousness. This is referred to as pre-syncope and should be investigated and managed in the same manner as syncope.
- Vasovagal syncope is a common and benign cause of syncope. It occurs due to an inappropriate response by the autonomic nervous system, typically to triggers such as changes in posture, pain, the sight of blood, or extreme emotional distress. Prodromal symptoms are common and can include a feeling of lightheadedness or dizziness, weakness, nausea, blurred vision, and a general sensation of unwellness or unease. Patients may be pale and diaphoretic. Vasovagal syncope is a diagnosis of exclusion and should be considered only after all potentially serious, life-threatening causes have been ruled out.
  - Bezold-Jarisch Reflex: Common cause of Neuro-cardiogenic syncope (aka, vasovagal syncope)
    - **Adrenergic stimuli (pain/emotion)**
    - --> Exaggerated catecholamine release

- ↑ Sympathetic tone ++
- ↑ β1 contractility, before α1 can ↑preload
- ↑ Ventricular contraction on under-filled chamber
- ↑ Mechanoreceptor activation from exaggerated contractile force
- --> Homeostatic vagal tone
- ↑ Vasodilation / Bradycardia ++
- --> SYNCOPE

## Interventions

**First Responder**

- Position the patient; if symptoms suggest hypotension, lay flat provided this does not increase symptoms
- If no suggestion of hypotension, place patient in position of comfort
- Maintain airway as required
  - → B01: Airway Management
- Provide supplemental oxygen as required
  - → A07: Oxygen Administration
- Obtain and document capillary blood glucose measurement; correct hypoglycemia if present
    - → E01: Hypoglycemia and Hyperglycemia

**Primary Care Paramedic – All FR and EMR interventions, plus:**

- Assess for source of syncope
- Monitor for signs of improvement if patient initially hypoperfusing
- Obtain vascular access and correct hypoperfusion
  - → D03: Vascular Access

**Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:**

- Provide advanced airway management if required
- Correct rhythm disturbances

## Evidence Based Practice

Syncope

### Supportive

- 12-Lead ECG
- Physical counterpressure manuvers

### Neutral

- Clinical Decision Making Rule

### Against

## References

1. Benditt D. Syncope in adults: Clinical manifestations and diagnostic evaluation. In UpToDate. 2019. [Link]

2. Benditt D. Syncope in adults: Epidemiology, pathogenesis and etiologies. In UpToDate. 2019. [Link]

## Practice Updates

- 2023-09-29: added glucagon and blood glucose measurement to FR interventions