**Medications** (Jones & Bartlett, 2021)

- vasopressin (Pressyn)
  - **Pharmacologic Class:** Posterior pituitary hormone
  - **Therapeutic Class:** Antidiuretic hormone
  - **Reason for Taking:** To control symptoms of diabetes insipidus
  - **Nursing Assessment:** Establish baseline date of BP, I&Os, and weight.
- perampanel (Fycoma)
  - **Pharmacologic Class:** AMPA Glutamate Antagonist
  - **Therapeutic Class:** Anticonvulsant
  - **Reason for Taking:** Reduce hypothermia-induced seizure.
  - **Nursing Assessment:** Obtain baseline creatinine level and weight.
- famotidine (Pepcid)
  - **Pharmacologic Class:** Histamine-2 blocker
  - **Therapeutic Class:** Antiulcer agent
  - **Reason for Taking:** To prevent duodenal ulcer
  - **Nursing Assessment:** Assess heart, ECG, and heart sounds before administration of famotidine.
- dexmedetomidine (Precedex)
  - **Pharmacologic Class:** Sedatives
  - **Therapeutic Class:** Sedative-analgesic agent
  - **Reason for Taking:** To keep patient sedated due to status.
  - **Nursing Assessment:** Observe for orthostatic hypotension before each dose.
- ketamine (Ketalar)
  - **Pharmacologic Class:** Analgesic
  - **Therapeutic Class:** Centrally acting nonopioid
  - **Reason for Taking:** To keep patient sedated due to status.
  - **Nursing Assessment:** Assess heart, ECG, vital signs, and LFTs before administration.

**Lab Values/Diagnostics** (Carle Database, 2022) (Pagana et al., 2019)

- pH (7.273) (NR: 7.35-7.45)
  - Lower pH value, putting the patient in an acidotic state, can be due to drowning causing laryngeal and pulmonary injury (Pagana et al., 2019).
- RBC (5.64 x $10^6$) (NR: 4.03-5.29)
  - Elevated RBC level can be due to hemorrhaging as a result from the patient's accident (Pagana et al., 2019).
- Hgb (16 g/dL) (NR: 11-14.5)
  - Elevated Hgb level due to the patient's status: failure of oxygenation and dehydration (Pagana et al., 2019).
- Hct (46.5%) (NR: 33.9-43.5)
  - Elevated Hct level due to the patient's status: failure of oxygenation and dehydration (Pagana et al., 2019).
- Platelets (169,000) (NR: 175,000-332,000)
  - Lower platelet levels can be indicative of hemorrhage that patient could have suffered from accident (Pagana et al., 2019).
- AST (173 U/L) (NR: 5-34)
  - Elevated AST value can be from myocardial infarction that patient had (Pagana et al., 2019).
- ALT (120 U/L) (NR: 0-55)
  - Elevated ALT value can be from myocardial infarction that patient had (Pagana et al., 2019).
- Creatinine (3.94 mg/dL) (NR: 0.55-1.3)
  - Elevated Creatinine levels can be from acute renal impairment, as a result from accidental drowning (Pagana et al., 2019).
- BUN (46 mg/dL) (NR: 8-21)
  - Elevated BUN levels can be from acute renal impairment, as a result from accidental drowning (Pagana et al., 2019).
- CK Total (1813 U/L) (NR: 30-200)
  - Elevated CK value can be from myocardial infarction that patient had (Pagana et al., 2019).
- No diagnostics upon assessment

## Demographic Data

**Date of Admission:** 10/31/2022
**Admission Diagnosis/Chief Complaint:** Hemodynamic instability secondary to cardiac arrest secondary to unintentional drowning.
**Age:** 17
**Gender:** Male
**Race/Ethnicity:** Caucasian
**Allergies:** No known allergies
**Code Status:** Full Code
**Height in cm:** 177.8 cm
**Weight in kg:** 88.5 kg
**Psychosocial Developmental Stage:** Identity vs. Role Confusion (Unable to determine due to the patient's status).
**Cognitive Developmental Stage:** Formal Operational Stage (Unable to determine due to the patient's status).
**Braden Score:** 14 (high risk)
**Morse Fall Score:** 16 (high risk)
**Infection Control Precautions:** Standard Precautions

## Admission History

These 17-year-old male was found face down in a pond, unresponsive with no pulse and not breathing. CPR was performed for 10 minutes prior to EMS arriving. ACLS was started with four rounds of epi. Upon arrival to the ED, the patient was intubated. The pupils were fixed and dilated bilaterally. The patient was hypothermic upon arrival and warm fluids were started. The patient was started on a low dose of Levophed which improved their blood pressure.

## Medical History

**Previous Medical History:** No previous medical history indicated by their mother.

**Prior Hospitalizations:** No prior hospitalizations indicated by their mother.

**Previous Surgical History:** No previous surgical history indicated by their mother.

**Social History:** The patient has no history of alcohol, tobacco, or drug use as indicated by their mother.

**Pathophysiology of Cardiac Arrest**

**Disease process:** The heart cannot pump and circulate blood to the body's organs and tissues. Cardiac arrest is secondary to arrhythmia and can also occur when electrical activity is present on the ECG, but cardiac contractions are ineffective, called pulseless electrical activity (PEA) (Hinkle & Cheever, 2022). PEA is secondary to various problems, such as profound hypovolemia and hemorrhage (Hinkle & Cheever, 2022).

**S/S of disease:** Clinical manifestations of cardiac arrest may include loss of consciousness, pulse, and blood pressure (Hinkle & Cheever, 2022). Breathing may usually cease, but ineffective respiratory gasping may also occur (Hinkle & Cheever, 2022). Pallor and cyanosis may be present on the skin and mucous membranes (Hinkle & Cheever, 2022). The patient was pale, anisocoric, and unable to oxygenate independently.

**Method of Diagnosis:** The method of diagnosis for a cardiac arrest includes a heart imaging test called an electrocardiogram (ECG), which will show severe ventricular arrhythmia or no heartbeat at all (Hinkle & Cheever, 2022). The observations of these signs and symptoms may also help diagnose cardiac arrest.

**Treatment of disease:** Treatment of a cardiac arrest may include CPR, Defibrillation, and ACLS (Hinkle & Cheever, 2022). CPR provides blood flow to vital organs until adequate circulation can be reestablished (Hinkle & Cheever, 2022). The defibrillator sends an electric pulse or shock to the heart to try and restore a normal heartbeat (Hinkle & Cheever, 2022). ACLS refers to clinical guidelines for treating cardiac arrest using advanced medical procedures, medications, and techniques (Hinkle & Cheever, 2022).

## Active Orders

- Consult Palliative Care
  - Palliative care due to the condition of the patient – drowning, anoxic brain injury.
  - Goal of care decision.
  - Active dying symptoms – the family will consider end-of-life order.
- Intubation
  - Intubation in place because the patient failed to oxygenate and failed to protect airway and to ventilate.
- Echocardiogram
  - Because of the patient's cardiac arrest, an echocardiogram was performed to show any other problems/defects with the heart.

**Physical Exam/Assessment**

**General:** The patient is sedated and intubated. There is no response to painful stimuli. Height 177.8 cm, Weight 88.5 kg, BMI 27.99 kg/m$^2$, T 97.7°F rectal, P 99 bpm, RR 16, BP 121/67, 97% $O_2$ on mechanical ventilator.

**Integument:** The skin is warm and dry upon palpation. The skin is elastic, intact, and pale. Skin turgor is less than two seconds, normal mobility. Nails are without clubbing. There are no rashes, bruises, or wounds upon inspection. The patient's capillary refill is less than 3 seconds between fingers and toes bilaterally. Drains/devices are present. Braden score of 14, indicating high risk. Skin interventions: absorbent pad, hand mittens, frequent positioning, padding around the bed.

**HEENT:** The patient's head and neck are symmetrical. There are non-palpable lymph nodes. There is no acuity to regular voices. There is no visible abnormality of ears or palpable deformities. There is edema present in hands and feet bilaterally. There is left and right eye scleral edema and redness with creamy drainage. The patient's EOMs are not intact bilaterally and no PERRLA b/l. The patient's septum is midline. The tongue is midline with no swelling or lesions and no loose teeth. Good dentition – braces present.

**Cardiovascular:** Upon auscultation, there are S1 and S2, without murmurs. Continuous ECG reading – normal sinus rhythm. The patient's extremities are pale, warm, and dry. There is edema noted on hands and feet bilaterally. No reports of chest pain, as the patient is sedated.

**Respiratory:** Upon auscultation, the patient's lungs are coarse, equal throughout bilaterally. The patient has assisted mechanically breathing rhythm/pattern. Chest expansion is symmetrical, with no retractions and no use of accessory muscles. Suction is present: oral/tracheal suction. Secretion assessments: scant, clear, and thin. O2 therapy: mechanical ventilator 60%. ETT oral tube – size: 6Fr.

**Genitourinary:** The patient's urine output is ~10 mL/hour. Urethral catheter is in place – size 16Fr due to the patient's status. The patient is hemodynamically unstable.

**Gastrointestinal:** The abdomen is flat, nondistended, and soft. There are audible hypoactive bowel sounds in all quadrants. The patient's BMI is 27.99 kg.m$^2$, indicating overweight. The patient has a rectal tube with balloon, due to status. Rectal tube output in the last 24 hours: 1470 mL, observations: large, watery, and brown. Feeding tube OG: Salem Sump – size: 16Fr Mouth.

**Musculoskeletal:** The patient has significantly impaired extremity movements. The patient's arm and hip muscle strength are rated at 0/5 bilaterally. The patient is sedated and intubated, therefore, absent hand grips and pedal pushes on arms and legs bilaterally.

**Neurological:** The patient is sedated and intubated. The patient is not alert or oriented. The patient's senses are not intact and upon assessment, PERRLA is absent bilaterally. The pupils are round, fixed, and there is an absent reaction to light bilaterally – left pupil size is 7mm and right puil size is 4mm, indicating anisocoria. The patient's RASS score = -5 (unarousable). LOC is unresponsive and Glasgow Coma Scale = 3.

**Most recent VS (include date/time and highlight if abnormal):** 11/03/2022 @ 1130 – Pulse: 99 | Respirations: 16 | SpO2: 97% mechanical ventilator 60% | BP: 121/67 mean cuff: 87 | Temperature: 97.7°F rectal probe

**Pain and pain scale used:** The patient is sedated and intubated – nonverbal indicators are absent; no pain score or scale used.

| **Nursing Diagnosis 1** | **Nursing Diagnosis 2** | **Nursing Diagnosis 3** |
|---|---|---|
| Decreased cardiac output related to decreased oxygenation as evidenced by mechanical ventilator dependency. | Risk for ineffective protection related to ventilator dependency as evidenced by the patient not being able to breathe on their own. | Compromised family coping related to temporary family disorganization and evidenced by altered caregiver health and psychosocial status. |
| **Rationale**<br>Due to the patient's status, they are dependent on the mechanical ventilator for life support. Inadequate blood pumped to the heart does not meet the metabolic demands of the body (Phelps, 2020). | **Rationale**<br>Due to the patient's status, they are dependent on the mechanical ventilator for life support. It is crucial that ventilator status is checked to ensure no problems that could potentially harm the patient (Phelps, 2020). | **Rationale**<br>The best opportunity for quality care occurs when the patient is facing death, and their family, is able to consider the meaning of their lives, plan, and shape the course of their living while preparing for death (Phelps, 2020). |
| **Interventions**<br>**Intervention 1:** Monitor at least Q4 hours and report and irregularities immediately in BP, HR, pulse.<br>**Intervention 2:** Administer oxygen, as prescribed. | **Interventions**<br>**Intervention 1:** Review the ventilator settings every hour. Notify the respiratory therapists of any issues.<br>**Intervention 2:** Assess the respiratory rate and rhythm, including the work of breathing. | **Interventions**<br>**Intervention 1:** Assess the level of anxiety present in the family.<br>**Intervention 2:** Establish rapport and acknowledge difficulty of the situation for the family. |
| **Evaluation of Interventions**<br>The increase in oxygen will supply to the myocardium. This may help indicate any potential complications related to the patient's status. | **Evaluation of Interventions**<br>The patient will remain free of injury while on the mechanical ventilatory as evidenced by proper ventilator settings and respiratory assessments. | **Evaluation of Interventions**<br>Anxiety needed to be dealt with before progression can begin. Information about family problems will be helpful in determining options and development of plan of care. |

**References (3) (APA):**

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Pagana, K. D., Pagana, T.J., & Pagana T. N. (2019). *Mosby's diagnostic and laboratory desk reference* (14th ed.). Elsevier.

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