ICU Case Study

Student’s Name:

Professor’s Name:

Course Title:

University Affiliations:

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**Introduction**

A trauma nursing team should always be ready to deal with varied types of injuries (Payen et al, 2015). It is therefore important to learn details on the injury mechanisms that can aid in predicting various types of injuries that the patient has and how effective care can be used to handle the injuries. The injury mechanisms define energy sources as well as circumstances that may have led to the trauma that can either be penetrating or blunt (Baumann et al, 2004). The various types of penetrating trauma injuries include; projectile damages, stabs from impaled objects or gunshot wounds. Blunt force trauma injuries are; sports-related injuries, motor vehicle crashes, assaults, blast force and industrial incidents (Payen et al, 2015). Intensive Care Unit is a special department within a hospital facility that offers intensive medicine or treatment (Lee, 2016). On the other hand, the Emergency Department is commonly known as a medical treatment facility that offers emergency treatment or medicine to patients who need acute care (Baumann et al, 2004). Patients are initially assessed in the emergency department and are later sent to other areas of the hospital depending on their fatality or ailment; one of the areas might be the Intensive Care Unit. In this essay, we deal with a 55-year-old patient who was admitted through the Emergency Department after a motor vehicle accident. In the paper, we assess the various procedures and assessments carried out on the patient in the emergency department and the ICU until recovery.

**Patient Assessment Data Collected for the Patient**

 the trauma team in the Intensive Care Unit awaited for Dean Parker to arrive at the facility, they had to assess the data they had received from paramedics through radio. This created a platform where the team could discuss their concerns about the patient’s possible injuries based on his injury mechanism. Knowing that Dean Parker had experienced a blunt injury mechanism where he had a motor vehicle accident, the nursing team expect that he experienced a lumbar spine fracture and some lower extreme trauma to do with calcaneus fractures. The team also revealed that they had to assess any traumatic injuries in his abdomen and chest. It is eminent that trauma care always starts by carrying out a primary survey through rapidly assessing the patient’s airway breathing or circulation abbreviated as ABC and checking on whether there is a D- disability and lastly for any E-Exposure (Davis et al 2004). This primary survey is essential for looking out for anything that may kill the patient instantly immediately as he/she arrives at the hospital facility. Afterward, a secondary survey is carried out which is a head to toe assessment that identifies any other serious fatalities that may kill or disable the patient later (Marshall, 2017).

The process of resuscitation occurs concurrently with a primary survey (Pocrnich et al 2019). As the emergency department team discovers life-threatening injuries, the nursing team intervenes to optimize perfusion, oxygenation, and ventilation. Such interventions include; replacement of blood with fluids, clearing the airway, controlling hemorrhage, inserting chest tubes, ventilating the patient and giving supplemental oxygen. Diagnostic studies normally follow both the surveys although the blood is drawn when catheters are placed during the initial survey that in this case was the primary survey (Davis et al 2004). In the case of Dean Parker, it is important to have a look at how the team meshes assessment as well as intervention during the crucial hours in the emergency department.

**Assessment Description and Rationale**

After the transportation of Dean Parker by the ambulance from the motor vehicle accident, the patient is immediately admitted to the emergency department after arriving at the facility. The patient is kept under trauma service since he is brought in while unconscious. No history is therefore collected during his admission. Through taking a standardized approach during treatment, the emergency department and the Intensive Care Unit team have to handle prevalent risks first (Lee, 2016). As usual, the teams begin with the ABCDEs which is also known as the primary survey; which is the management of immediate threats. The ABCDEs handled are explained below.

**Airway:** When Dean Parker is brought in the trauma room; he cannot converse and hence cannot provide any accounts regarding his accident. Due to this factor, his airway assessment has to be undertaken thoroughly. Spinal precautions are highlighted before the process to ensure cervical injuries are ruled out. The initial step of the primary survey is checking any potential fatalities in the cervical spine. When the cervical spine injury has been confirmed as okay, the team opens Parker’s airway through the use of a jaw-thrust maneuver by ensuring that there is stabilization of the neck. Any food, vomit, blood or any debris found was sanctioned from the airway to avoid aspiration. The patient was carefully rolled to his side for better action, the spine and neck were also stabilized during the process. According to the ED team, if a patent airway was not maintained, there was an immediate need for an endotracheal incubation taking place to decompress the stomach and to eject any gastric contents. However, in the case of midface traumas, the gastric tube had to be passed orally.

**Breathing:** After the initial step of the primary survey, Dean Parker’s breathing was assessed next. The factors checked included; respiratory rate, accessory muscle use, chest expansion and the auscultate breath. Since the patient was not conscious, fluid resuscitation and stabilization was carried out. According to the emergency department team the fatal injuries that may have tampered with his ventilation included; head trauma, hemothorax, rib fractures and injuries at the spinal cord. Unfortunately, Dean Parker experienced a flail chest, respiratory acidosis, positive pressure ventilation. However, the emergency department was able to stabilize the ventilation issues. If the patient continued to have severe respiratory distress, rapid treatment was needed through an emergency chest decompression whereby a catheter is placed into the patient’s chest until a chest tube is used to replace it. The emergency team ventilator efforts were adequate since his breath sounds begun to be clear. However, Parker was kept in ventilator support for a day to ensure that a reduction was experienced in the cerebral oedema.

**Circulation**: Once the emergency department team supported and assessed Dean’s Parker’s breathing, they processed into attending his circulatory status. Firstly, they had to assess the quality or rather the presence of peripheral pulses to estimate his BP. The team assessed and found that the parker had a radial pulse. This was concluded after observing that his systolic BP was at 90 mmHg.

**Disability**: To assess disability, the emergency department team had to evaluate Parker’s LOC, his pupil response together with his gross sensorimotor functions. By keeping in mind that acute scoring can be tampered by causes, which are; metabolic, toxic or traumatic. Whether the patient remembers any events during the motor vehicle accident is very important Amnesia of these events shows that the patient has lost consciousness that was the case for Dean Parker. During the assessment of disability, it important to carry out tests of the patient’s gross sensorimotor abilities. The patient should be asked whether they are experiencing any abnormal sensations, tingling or numbness. The patient, in this case, was not conscious hence some of the disability factors were not assessed adequately.

**Exposure**: The last component of the primary survey carried out on Dean parker was exposure. The emergency department team remove Parker’s clothing completely to inspect whether the body had any injuries. Good judgment was used when removing his clothing to avoid worsening pain or injuries on his body. Trauma shears were used while cutting the clothing. Once the clothing was removed, the team protected Dean Parker from hypothermia which can be hazardous to trauma patients since it impairs their blood coagulation and may interfere with any resuscitation efforts.

**Pathophysiology**

Pathophysiology is referred to as the study of biological and physical abnormalities, which occur in a patient’s body because of injury or disease (Puri & Spevetz, 2018). The pathophysiology of Dean Parker’s injury was quite complex and elucidated. It was clear that the reperfusion of oxygen aided in generating toxic oxygen. Trauma patients are prone to deteriorating fast and that is the reason why it is essential for the emergency department team to assess the victim frequently and thoroughly (Rood et al, 2015). The pathophysiology of the trauma patient should consider their general health and age. Appropriate interventions used during pathophysiology were initiated well and documented properly.

Once the primary survey was completed, the team began carrying out a secondary survey also known as the head to toe body system approach carried out in the ICU. This is carried out to prevent any injuries that can later kill or disable the patient. In the case of Dean Parker, assessment begun at his head moving down methodically in search of any; injuries, abrasions, contusions, foreign bodies, abnormalities, and discoloration. Any pain detected was managed optimally while his wounds were debrided and cleaned. After these initial steps, the trauma physicians considered ordering a Size 8 ET tube urinary catheter that was utilized to accurately measure his urinary output as well as his renal perfusion. Before inserting the urinary catheter, it was relevant to look for any blood in the urethral meatus. The team reassessed Dean Parker to look out for any vital signs depending on his condition. A more complete history of Parker was also derived from his family using the mnemonic “AMPLE”. The mnemonic represents the critical history of the trauma patient. AMPLE stands; allergies, medication use, past medical history, last meal and the events that are concerning the injury (Payen et al, 2015). Other elements that were assessed were; medications used by the patient before admission, steroids used recently and for any immunizations given in the past five years.

Parker’s secondary survey was remarkable for pains at his spine whereby abrasions and tenderness were observed in his rib cage. After the urinary catheter was inserted, a dipstick urine test was performed which revealed positive results of small amounts of blood. After the primary and secondary assessments are carried out the ICU patient should be prepared for a series of scans and X-rays (Bly et al, 2016). A stat portable X-ray was carried out to figure out if there are any diaphragmatic injuries or rib fractures or to assess for pneumothorax. A cervical spine X-ray was undertaken to assess for any cervical spine injuries. The results taken from the first two surveys were relevant in identifying whether any additional scans should be carried out on the spine or the pelvis. Since the patient came in while unconscious, a computed tomography also known as the CT scan was carried out on his head. The CT scan revealed that the parker had nil skull fractures but the team realized that there was an increased intracranial pressure. An open reduction internal fixation was identified as well as an ulna fracture. The renal CT scan indicated that there are small-encapsulated renal hematoma in Parker’s body. The patient was kept under ventilator support for a day to increase the reduction in cerebral oedema. After the assessment, the following indicators were watched; arterial line with 100 U/S heparin at 3ml/hr., volume control at Rate 16 pH < 7.45, PEEP 10, Normal saline 1, 000 ml for over 6 hours. The rest of the vital indicators included; oxygenation at > 90mmHg, Sedation using midazolam at 4 – 7 mgs per hour for effect and morphine infusion of 100mg in 100ml at 5 mls every hour.

**Conclusion**

Taking care of Dean Parker was a huge responsibility for the emergency team department. After his release from the theatre, the emergency department team came up with a plan of care. The latter was made up of interventions that would help in the following; maximize Dean Parker’s energy, promote his rest, control pain levels, avoid any respiratory declines, promote renal function, and increase his ability to manage to carry out day to day activities before being discharged. Other interventions included close monitoring of alarming signs during his practice of daily living activities and looking out for an increased heart rate. After Dean Parker gained his consciousness, he was allowed to participate in setting realistic goals with the emergency department multidisciplinary team. Frequent resting periods were offered in between activities to reduce oxygen demands and to maximize his energy levels. The primary goal of the interventions was to promote functionality in Parker and to decrease any symptoms that could lead to organ failure. The day to day round sessions by the emergency department team and nurses produced better results from Parker. Careful plans and intervention goals should be developed for an ICU patient to help in establishing positive and healing outcomes for the patient (Bly et al, 2016). A continuous assessment and evaluation of planned goals ensured that care was tailored to Parker’s individual needs which helped in promoting family-centered and patient care. The thorough execution of primary care helped Dean Parker to be eventually discharged from the hospital facility but was advised to get physical therapy from the hospital every week.

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