<table>
<tr>
<td>Medications
(see attached)</td>
<td rowspan="2">Student Name: Courtney Wiener Client Initials: DA Date: 11/04/11

Age: 37 Gender: M Room #: ICU 06-1 Admit Date: 08/25/11

CODE Status: DNR-Comfort Care Arrest Allergies: NKDA

Diet: Tube feeding Activity: Absolute Bedrest Braden Score: 11</td>
<td rowspan="3">State lab values and identify trends.
Na: 157↑
K: 4.1
Cl: 119↑
CO_2: 24
AGAP: 14
Glu: 170↑
BUN: 67↑
Cr: 3.89↑
BUN/Cr: 17
Albumin: 1.5↓
Ca: 7.6↓
PO_4: 7.8 ↑
WBC: 12.7↑
RBC: 2.10↓
Hgb: 5.9↓
Hct: 18.5↓
MCV: 88.1
MCHC: 33%
PLT: 672↑
Neutrophil%: 64
Lymphocyte%: 26
Monocyte%: 2
Eosinophil%: 1
Fibrinogen: 256
pH: 7.55↑
$PaCO_2$: 35.9
PaO_2: 172↑
HCO_3: 30.5↑</td>
</tr>
<tr>
<td>ECG Interpretation

Normal Sinus Tachycardia

<u>NOTE</u>: ECG is not available because it was the first week of clinical when I had this patient and it is hard to distinguish where it is located at this time</td>
</tr>
<tr>
<td>IV Sites/Fluids/Rate

Right Upper Arm PICC triple lumen
D5%W @ 50cc/hr
Site is WNL. Dressing is dry, and intact.</td>
</tr>
<tr>
<td>Monitoring: Invasive/Non-Invasive State specific monitoring device and specific values with each device

-EKG on continuous monitoring
-Foley catheter
-Continuous Blood Pressure</td>
<td>Chief Complaint/Admitting Diagnosis(es): Multiple Trauma

Medical/Surgical Diagnosis(es): Traumatic Brain Injury</td>
</tr>
</table>

Past Medical/Surgical History Relevant to this admission -Hypertension -Family denied any history of cardiopulmonary disease, GI or GU disorders, and stated he has had no chronic illnesses.	1.Describe the patient's condition, including signs/symptoms that led to this admission ▪ DA was riding his motorcycle without a helmet, while intoxicated, and collided with another vehicle. He was thrown from the motorcycle and landed on his head several feet up the street from the crash. He had agonal respirations, was unresponsive, and had a Glasgow Coma Score of 3 upon arrival to the ED. In the ED the patient was intubated on a ventilator with some active bleeding from his nose and mouth. The following information is from his assessment in the ED after the collision. He had multiple palpable skull fractures and facial swelling. His pupils were fixed and dilated. Dental injuries were present. Trachea was midline. Scalp lacerations present on the right side of his face. Thorax symmetrical with respiration and no subcutaneous emphysema. Heart rate tachycardic with regular rhythm. Bilateral breath sounds with good aeration bilaterally. Abdomen soft with mild distention and tympany, distension was thought to be due to air. Foley catheter inserted and drained clear yellow urine. Right lower extremity had a "degloving" type laceration injury on the lateral aspect of the right foot. 2. Briefly describe the pathophysiology related to the patient's diagnosis and current medical/surgical condition. ▪ Major Head injuries cause direct damage to the parenchyma of the brain. A blow to the surface of the brain results in rapid brain tissue displacement and disruption of blood vessels, leading to bleeding, tissue injury, and edema. Damage to the brain and skull includes the blow itself, or primary injury, and secondary injury, known as a continuing injury that occurs from edema, inflammation, and hemorrhage within the brain. Secondary injury can result in more severe manifestations than those from the actual impact itself and cause loss of brain tissue that was not originally damaged. Hemorrhage may be diffuse if it is due to the tearing of several small vessels within the brain.	**State diagnostic test results** Chest X-ray: Results showed hazy infiltrate in the right upper lobe and a pulmonary contusion in the right upper lobe. CT scan: Results were negative for fracture in the cervical spine; positive for pulmonary contusion in the chest; negative with no signs of intraabdominal hemorrhage in the abdomen and pelvis; results of the head shows "extensive" skull and facial fractures with "extensive" pneumocephalus, "extensive" intracranial hemorrhage with intracranial swelling, subdural and subarachnoid hemorrhage, acute hemorrhage in the lateral ventricles, parenchymal hemorrhage in the frontal lobes bilaterally, and multiple facial fractures including the orbits and sinuses EEG: This report stated, "Indicated for patient because patient was comatose following his head injury. Attempted to do this as a brain-death but was very difficult to do, due to traumatic swelling of the

	Inflammation from the injury will lead to cerebral edema and increase intracranial pressure, which can further cause the brain to become hypoxic (Black, & Hawk, 2009). When autoregulation is disrupted, as in a head injury, cerebral hypoperfusion leads to brain tissue ischemia. Tissue ischemia occurs in areas of poor cerebral perfusion, due to hypotension or hypoxia, causing the cells to become edematous. Extreme vasodilation of the cerebral vasculature occurs in an attempt to supply oxygen to the cerebral tissue which will increase intracranial volume and increase intracranial pressure (Urden, Stacy, & Lough, 2010). Other causes of secondary injury include increased intracranial pressure, respiratory problems, electrolyte imbalance, and infection (Black, & Hawk, 2009). 3. Describe the patient's head to toe assessment findings and explain how they relate to the pathophysiology. Include the vital signs. ▪ VS at 0730: HR – 105 regular, RR – 30, POX – 100%, BP – 91/53, MAP – 67, Rectal Temp – 97.7°F ▪ Neuro: A&O x 0 (deep coma). GCS=4. Pupils 8mm non-reactive bilaterally. Pt has cough reflex, no gag or corneal reflex noted. Pt has +1 scleral and +1 orbital edema in both eyes. Pt has +1 mild edema in face and posterior neck. Cerebrospinal fluid is present, clear, and small amount draining out of right nostril. Pt is comatose and non-responsive to touch. All extremities are absent of movement. Hand grasps absent bilaterally. Pt shows decerebrate posture when pressure applied to nail beds. Pt has severe weakness. Pt lying in bed with HOB elevated 35°. ▪ Cardio: Apical rate is tachycardic and regular rhythm. No murmur or rub heard. Skin is warm, dry, and intact. Cap refill less than 3 seconds bilaterally. Radial pulse +2 bilaterally, Right dorsalis pedis pulse +1, Left dorsalis pedis pulse +2, Posterior tibial +1 bilaterally. SCD's on LLE only due to wounds on RLE. ▪ Lungs: Right lobes rhonchi/coarse and decreased anteriorally	scalp tissue, bone fractures, and lacerations that made it nearly impossible to perform. Results showed a very abnormal recording - the patient is not brain dead, there is possible epileptic activity, and asymmetric slowing with the right hemisphere being markedly slower and with less activity than the left." <u>Transcranial Doppler study:</u> Showed evidence of mild stenotic flow in right ACA; no evidence of vasospasm; showed low (living) and high (dead) resistant brain tissue Treatments/ Medical and Nursing Interventions -OG tube -ET tube -Ventilator mode set at AC, FiO_2: 40%, TV: 400, RR: 14, PEEP: 0 -LLE SCD only, due to wound on RLE -Mouth care q2h -Blood sugars q6h -Cooling blanket for temp greater than 101°F - HOB elevated 35°

	and posteriorally. Left lobes clear and decreased anteriorally and posteriorally. No cough present; secretions are thick, tan, and blood-tinged when moderate amount suctioned from ETT. No respiratory distress noted at this time. ▪ GI/GU: Abdomen is distended and firm. BSx4 hypoactive. OG tube placement verified by air bolus over epigastric. Pt has foley catheter with amber color urine and sediments present in the urine. DA has a feeding tube via OG tube of Novasource Renal @40cc/hr with no residual. Pt also receives 250cc of Tap H2O every 6 hours via OG tube. Pt had no bowel movement during my shift. ▪ Wounds: Top of the head open laceration injury that is red with moderate serosangiouness, bloody drainage. Right foot has large laceration that is red with small serosangiouness drainage. Right arm has large abrasion areas that are red and pink with scant amount of serosangiouness drainage. Pt also has abrasions along the RLE, face, left ear, and right chest that are red and pink with small amounts of serosangiouness drainage. 4. Integrate the current laboratory, diagnostic test results, hemodynamic parameters, medications, medical and nursing interventions, and other treatments into the pathophysiology and explain how it is affecting this patient's outcome/current condition. ▪ Pneumocephalus is the presence of air within the cranial cavity, which in DA's case, entered through the skull and facial fractures from his accident. Facial fractures and lung injury may contribute to respiratory insufficiency making it difficult to breathe and also decreases oxygenation to the brain and other tissues, possibly resulting in tissue ischemia of the brain (Black, & Hawk, 2009). ▪ Pulmonary contusion, or bruising/injury to the lung parenchyma, may cause pain and trouble breathing leading to edema and blood collecting in alveolar spaces and loss of normal lung structure & function. This blunt lung injury leads to poor gas exchange, increased pulmonary vascular resistance	

	and decreased lung compliance (Black, & Hawk, 2009). DA showed no sign of respiratory distress at the time of my assessment but respiration rate was 30 breaths per minute and fluctuated between 20 to 30 breaths per minute throughout my shift. ▪ DA's CT scan showed results of intracranial hemorrhage, subarachnoid swelling, acute hemorrhage in the lateral ventricles, and parenchymal hemorrhage bilaterally in the frontal lobes. Any type of bleeding in the brain will increase intracranial pressure (ICP), which is the pressure exerted in the skull by the brain, blood, and cerebrospinal fluid (CSF), that will result in cerebral edema and brain swelling (Urden, Stacy, & Lough, 2010). DA did not have any ICP monitoring devices or any information on a past ICP reading. Intracranial swelling and hemorrhaging in the brain from DA's traumatic injury led to a decreased LOC, deep coma state, GCS of 4, pupils 8mm non-reactive bilaterally, CSF leaking out of right nostril, nonresponsive, and decerebrate posture with pressure applied to his nail beds. ▪ Sodium could be increased due to hypovolemia and hyperventilation. Chloride levels could be increased due to hypernatremia, hyperventilation related to head injury, post-hemorrhagic anemia, and hypoproteinemia. Glucose levels could be increased due to shock, trauma, acute stress reaction, and hydantoin medications such as Phenytoin. BUN levels could be increased due to shock, hypovolemia, or infection. Creatinine levels could be increased due to trauma with the absence of renal disease. Phosphate levels could be increased due to the medication Phenytoin. White blood cell and platelet levels could be increased due to infection, stress, trauma, anemia, and hemorrhage. Increased pH and HCO_3 levels with a normal $PaCO_2$ indicate uncompensated metabolic alkalosis. Albumin, red blood cell, hemoglobin, and hematocrit levels are decreased most likely due to hemorrhage. Calcium levels could be decreased due to alkalosis and hypoproteinemia (Pagana, &	

	Pagana, 2004). ▪ DA's ET tube is used to help keep his airway open, suction out secretions, and reduce the risk of hypoxia and hypercapnia. ▪ His HOB is raised to promote venous drainage and reduce cerebrovascular congestion and swelling which will then decrease ICP. ▪ DA is taking a bronchodilator which will help to decrease his difficulty with breathing and improve his breath sounds. His anti-convulsant medication is important because it will prevent seizures from occurring due to his head injury, hemorrhage, and swelling of the brain. DA is on an anti-infective to protect him against susceptible bacteria that could have entered his body through his wounds and multiple breaks in his skin from his accident. He is taking an anti-emetic that will prevent him from nausea or vomiting that can occur from build-up of pressure on the medulla in the brain, which stimulates vomiting.	

Primary Nursing Diagnosis with Relational Statement	Short Term Goal Relevant to Nursing Diagnosis	6 Nursing Diagnosis with Relational Statement
Ineffective Cerebral Tissue Perfusion related to intracranial hemorrhage from traumatic brain injury secondary to hypotension and cerebral edema.	The patient will have increased circulation in the cerebral tissue as evidenced by increased GCS score to 6 or greater and improved LOC measured by arousal state, wakefulness state, and response to stimuli by the end of my shift. --DA did not show any improvement in LOC with no change in arousal or wakefulness state, no response to touch, verbal, or painful stimuli and no change in GCS score during my shift.	1. Ineffective breathing pattern related to neuromuscular impairment 2. Risk for Infection related to open head lacerations with serosangiouness and bloody drainage secondary to traumatic injury 3. Risk for aspiration related to absence of gag reflex and decreased LOC 4. Imbalanced Nutrition: Less than body requirements related to increased metabolic demand

Definition (State definition and source) The state in which an individual has decreased circulation in the cerebral tissue (Carpenito-Moyet, 2010). **AEB**: Defining characteristics specifically exhibited by your patient that support primary nursing diagnosis AEB… -HR 105 -RR 30 -BP 91/53 & MAP 67, -Rectal Temp 97.7°F, -A&O x 0(deep coma) -GCS=4 -Clear CSF drainage out of right nostril -Pupils 8mm non-reactive bilaterally +1 scleral & +1 orbital edema in both eyes +1 mild edema in face and posterior neck -Pt is comatose and non-responsive to touch -All extremities are absent of movement -Pt shows decerebrate posture when pressure applied to nail beds	Outcome Criteria (Must be specific and measurable) **Evaluate** patient progress towards achieving outcome criteria as a result of nursing interventions. 1. During my shift DA will show improvement in LOC as evident by arousal or response to touch and verbal stimuli by the end of my shift. **-Outcome not met.** DA showed no improvement in level of arousal or wakefulness, he did not respond to touch or verbal stimuli by the end of my shift. 2. DA will present improvement in GCS greater than 6 by the end of my shift as evident by opening eyes in response to painful stimuli, flexing upper extremities in response to pain, or making incomprehensible verbal sounds in response to painful stimuli. **-Outcome not met.** The patient had no change in GCS maintaining a score of 4 at the end of my shift. He did not open his eyes in response to nail bed pressure or suctioning. He still presented decerebrate posture with pressure applied to his nail beds and did not make any verbal sounds. 3. DA will not have any seizure activity during my shift. **-Outcome met.** DA did not show any seizure activity during my shift which if seizures did occur they would further decrease cerebral tissue perfusion and increase ICP.	5. Disturbed Sensory perception related to altered sensory reception or transmission secondary to neurologic trauma 6. Decreased Intracranial Adaptive Capacity related to failure of normal compensatory mechanisms

	4. DA will maintain a temperature below 101°F throughout my entire shift. **-Outcome met.** DA's temperature maintained below 101°F fluctuating between 97.7°F and 98.7°F during my shift. 5. DA will maintain a blood pressure <130/90 and >90/60 to maintain cerebral perfusion and ensure oxygen and nutrients are being delivered to brain tissue during my shift. **-Outcome met/not met.** DA had a BP reading of 91/53 which is not in the above parameters but throughout the rest of my shift his BP fluctuated between 91/53 and 93/68, so at some times it was within the established parameters above.	
Identify nursing interventions that you implemented with this patient. 1. Perform neurologic assessments and GCS assessment every 2 hours to monitor for improvement in LOC and neurological status. --Pt did not show improvement in LOC or GCS scores. Pt did not respond to verbal, touch, or painful stimuli throughout shift. Pt still showed decerebrate posture when pressure applied to nail beds. Pt did not open eyes or verbally make any noise throughout my shift. Pupils remained dilated at 8mm bilaterally with no reaction to light. Pt still remained his deep coma state. 2. Keep patient's HOB elevated 35° with the patient laying supine and head in a neutral position at all times to facilitate venous drainage from the brain which will help to decrease swelling and ICP and possibly decrease coma state/increase LOC. This will also help to improve ventilation, decrease risk of aspiration, and decrease workload on the lungs.		What I Would Do Differently I would have asked more about comfort care protocols to better understand the care for a comfort care patient.

--Pt tolerated HOB elevation well. DA did not show signs of increased LOC. Respiratory rate fluctuated between 20 to 30 breaths per minute throughout my shift. 3. Use cooling blanket if temperature increases greater than 101°F to prevent hyperthermia because it will increase metabolic demand and increase ICP. --Pt maintained a temperature between 97.7°F and 98.7°F during my entire shift. 4. Apply continuous HR and BP monitoring and assess every hour to monitor hemodynamics and maintain cerebral perfusion to ensure adequate oxygen and nutrients are reaching the brain tissue. --Pt HR was tachycardic between 100 and 108. Pt BP fluctuated between 91/53 and 93/68 throughout shift. 5. Administer anticonvulsants every 8 hours to decrease the risk of seizures occurring. --Pt showed no signs or symptoms of seizure activity. 6. Maintain a calm environment for the patient continuously; including cluster nursing and decreased stimuli (dimmed lights, decreased auditory stimuli, very limited or no visitors) to avoid stimulation of increased ICP which would further negatively affect perfusion to the brain tissue or cause a seizure. --Cluster nursing performed. Pt tolerated well. Pt maintained in a calm environment with no signs or symptoms of increased ICP or seizure.	

MEDICATION WORKSHEET

Courtney Wiener			11/04/11	
Student Name			**Date**	
D.A.	Traumatic Head Injury	NKDA	68	ICU 06-1
Patient Initials	**Diagnosis(es)**	**Allergies**	**Weight (kg)**	**Unit/Bed**

ORDER Drug Name (generic & trade) Dosage Frequency Route **Show dosage calculations** ***Include all IV continuous medications***	**DRUG CLASSIFICATION/ THERAPEUTIC USES** 1. Identify pharmacologic/therapeutic classification 2. Describe mechanism of action for the drug and the END RESULT of that action 3. Describe how your patient will benefit from this drug *For insulin, include onset, peak and duration	**PATIENT-SPECIFIC NURSING RESPONSIBILITIES** 1.Identify your specific nursing responsibilities related to the administration of this medication to your patient. 2.Include all patient specific data relevant to this drug (i.e. HR=82, K=4.1)
Ipratropium bromide/Atrovent HFA 0.5mg IH q6h	Pharmacologic Class: anticholinergics Therapeutic Class: allergy, cold & cough remedy, bronchodilator Action: Inhibits cholinergic receptors in bronchial smooth muscle, resulting in decreased concentrations of cGMP which will produce local bronchodilation. End Result: Bronchodilation without systemic anticholinergic effects like dry mouth and blurred vision. --This will improve the pts breath sounds and decrease difficulty of breathing.	1. Administer after adrenergic bronchodilators like Albuterol, and before corticosteroids waiting 5 minutes between each med. Assess respiratory status (rate, breath sounds, pulse, degree of dyspnea) before giving and at peak of med. 2. RR of 30 at 0730 with HR of 105. Pt is tachypneic, unresponsive, and suffers from severe weakness. No cough present. Decreased rhonchi lung sounds in right lobes with clear left lobes.
Phenytoin/Dilantin 100mg PO q8h	Pharmacologic Class: hydantoins Therapeutic Class: antiarrhythmics, anticonvulsants Action: Limits seizure propagation by altering ion transport and may also decrease synaptic transmission. Antiarrhythmic properties as a result of shortening the action potential and decreasing automaticity. End Result: Decrease or cessation of seizures without excessive sedation. Suppression of arrhythmias. Relief of neuropathic pain. --This will prevent the occurrence of seizure activity that could occur due to the traumatic injury of his head and swelling of his brain.	1. Flush OG tube with 2–4 oz water before and after administration. Assess oral hygiene. Assess location, duration, frequency, and characteristics of seizure activity. 2. EEG results showed possible epileptic activity. HR 105 and regular. RR 30.
Insulin Human Lispro/Humalog 5-25u SQ q6h per sliding scale	Pharmacologic Class: pancreatic Therapeutic Class: antidiabetic, hormone Action: Lowers blood glucose by inhibiting hepatic glucose production and stimulating glucose uptake in skeletal muscle and fat. Onset: within 15min, Peak: 1-1.5hrs, Duration: 6-8hrs. End Result: Controls hyperglycemia in diabetic patients. --Although my pt is not diagnosed as diabetic, DA can use this to control his blood sugar during hyperglycemic states per his sliding scale.	1. Do not give IV. Assess for symptoms of hypoglycemia and hyperglycemia. 2. Blood glucose 170.

MEDICATION WORKSHEET CONT.

ORDER Drug Name (generic & trade) Dosage Frequency Route **Show dosage calculations** ***Include all IV continuous medications***	**DRUG CLASSIFICATION/ THERAPEUTIC USES** 4. Identify pharmacologic/therapeutic classification 5. Describe mechanism of action for the drug and the END RESULT of that action 6. Describe how your patient will benefit from this drug *For insulin, include onset, peak and duration	**PATIENT-SPECIFIC NURSING RESPONSIBILITIES** 1. Identify your specific nursing responsibilities related to the administration of this medication to your patient. 2.Include all patient specific data relevant to this drug (i.e. HR=82, K=4.1)
Docusate Sodium/Colace 100mg GT BID	Pharmacologic Class: stool softener Therapeutic Class: laxative Action: Promotes incorporation of water into stool, resulting in softer fecal mass. May also promote electrolyte and water secretion into the colon. End Result: softening and passage of stool --This will help DA's stool to soften so it can pass through the colon easier and prevent constipation from occurring.	1. Crush medication and dilute with warm water then insert via OG tube with proper technique, after checking for placement. Assess for abdominal distension, & presence of bowel sounds 2. Abdomen distended and firm. BSx4 hypoactive. OG tube placement verified by air bolus over epigastric. Pt did not have a BM during my shift.
Meropenem/ Merrem 500mg in NaCl 0.9% 50mL IV q12h	Pharmacologic Class: carbapenems Therapeutic Class: anti-infective Action: Binds to bacterial cell wall resulting in cell death End Result: resolution of signs and symptoms of possible infection --This will protect DA against susceptible bacteria that could have entered his body through his wounds and multiple breaks in his skin from his accident.	1. Administer over 3-5 minutes. Assess patient for infection: look at vital signs, appearance of wound, sputum, urine, stool, and WBC throughout therapy. 2. WBC: 12.7↑, HR 105 and regular, RR 30, Rectal Temp 97.7°F, amber color urine with sediments present, pt had no BM during my shift. Wounds: Top of the head open laceration injury that is red with moderate serosangiouness, bloody drainage. Right foot has large laceration that is red with small serosangiouness drainage. Right arm has large abrasion areas that are red and pink with scant amount of serosangiouness drainage. Pt also has abrasions along the RLE, face, left ear, and right chest that are red and pink with small amounts of serosangiouness drainage
Metoclopramide HCL/ Reglan 10mg IV q8h	Pharmacologic Class: N/A Therapeutic Class: antiemetic Action: Blocks dopamine receptors in chemoreceptor trigger zone of the CNS. Stimulates motility of the upper GI tract and accelerates gastric emptying. End Result: Decreased nausea and vomiting --This will prevent DA from getting nausea or vomiting	1. Assess patient for nausea, vomiting, abdominal distension, and bowel sounds before and after administration. 2. Abdomen distended and firm. BSx4 hypoactive. Pt was unresponsive and could not communicate feelings of nausea, but DA did not vomit during my shift.

***All of the medication information above was obtained from Davis' drug guide for nurses*

References

Black, J.M., & Hawks, J. H. (2009). *Medical-surgical nursing: Clinical management for positive outcomes* (8th ed.). Philadelphia: W. B. Saunders Co.

Carpenito-Moyet, L. J. (2010). *Nursing Diagnosis: Application to clinical practice* (13th ed.). Philadelphia: Lippincott.

Deglin, J.H., & Vallerand, A.H. (2009). *Davis's drug guide for nurses* (12th ed.). Philadelphia: F.A. Davis Company Publishers.

Pagana, K.D., & Pagana, T.J. (2006). *Mosby's manual of diagnostic and laboratory tests*. Mosby Elsvier Incorporation.

Urden, L.D., Stacy, K.M., & Lough, M.E. (2010). *Critical care nursing: Diagnosis and management* (6th ed.). St. Louis: Mosby-Elsevier.