

Medications

Acetaminophen (Tylenol) 325mg oral liquid every 4 hours as needed

Therapeutic class: antipyretic, nonopioid analgesic (Jones & Bartlett Learning, 2023).

Pharmacological class: nonsalicylate, para-aminophenol derivative (Jones & Bartlett Learning, 2023).

The patient is taking this medication for mild pain.

A key nursing assessment before administration assesses how much has been given and monitoring for the daily maximum intake to prevent acetaminophen overdose (Jones & Bartlett Learning, 2023).

Famotidine (Pepcid) 15mg VP twice daily at 0900 and 2100.

Therapeutic class: antulcer agent (Jones & Bartlett Learning, 2023).

Pharmacological class: histamine-2 blocker (Jones & Bartlett Learning, 2023).

The patient is taking this medication to decrease stomach acid reflux into the airway after intubation.

Key nursing assessments when giving famotidine are monitoring for airway patency due to the risk for bronchospasm and laryngeal edema and monitoring for GI upset or bleeding (Jones & Bartlett Learning, 2023).

Ibuprofen (Advil) 200mg oral suspension every 6 hours as needed.

Pharmacologic class: NSAIDS (Jones & Bartlett Learning, 2023).

Therapeutic class: Analgesic, anti-inflammatory, antipyretic (Jones & Bartlett Learning, 2023).

The patient is taking this medication for mild throat pain post-otubation and fever.

Key nursing assessments when giving ibuprofen are to assess the GI system and monitor for signs of bleeding before giving. They should also be sure to give the medication with food and water to prevent GI distress and have the patient sit up for 30 minutes after taking (Jones & Bartlett Learning, 2023).

Levetiracetam (Keppra) 600mg oral solution twice daily at 0900 and 2100.

Pharmacologic class: Pyridoline derivative (Jones & Bartlett Learning, 2023).

Therapeutic class: Anticonvulsant (Jones & Bartlett Learning, 2023).

The patient is taking this medication for seizures.

Key nursing assessments prior to giving this medication include monitoring vital signs, watching for seizure activity, and monitor for allergic reactions (Jones & Bartlett Learning, 2023).

Demographic Data

Admitting diagnosis: Status Epilepticus with Respiratory Failure

Age of client: 9 years

Sex: Female

Weight in kgs: 30 kg

Allergies: Seasonal

Date of admission: 10/03/2024

Admission History

This patient presented to the emergency room for seizure activity. At 0600 on 10/3/24, the patient's parents woke to her shaking in bed. They stated that her head and body were jerking, she was drooling, and she was not responsive. The patient's father noted that her fingers were turning blue, which prompted them to call EMS, whom they met in the field. When EMS intercepted, the patient was still actively seizing and cyanotic. Per the parents, the patient had been seizing for over 5 minutes. The patient then became post-ictal with a GCS of 3. EMS intubated in the field with ketamine and succinylcholine for airway protection. The patient began seizing again en route to the hospital. She was given ketamine and Ativan on arrival. After arrival, she was taken to CT and MRI and admitted to the PICU. The patient had a prior history of a single-event seizure in February 2024, but no treatment was given and she was released by her neurologist after remaining seizure-free for 6 months.

Pathophysiology

Disease process: Status epilepticus (SE) is a subset of epilepsy that is a medical emergency. It is characterized by prolonged seizures, typically longer than 5 minutes, or repeated seizures without fully regaining consciousness between episodes (Wylie et al., 2024). The seizures occur due to neurochemical changes which cause sustained neuronal excitability and impaired inhibitor signals (Wylie et al., 2024). In SE, this state of hyperexcitability is continuous and may cause an imbalance of glutamate and GABA neurotransmitters (Wylie et al., 2024). The prolonged seizure activity can disrupt normal brain function, leading to increased oxygen and glucose demand in the brain and ultimately alterations in blood flow to the brain tissue, especially if intracranial pressure becomes too high (Wylie et al., 2024). SE can also lead to respiratory failure, as with this patient. This can be due to muscle fatigue, reduction of cardiac output, impaired venous return,

decreased respiratory drive, or a combination of these factors (Wylie et al., 2024)

S/S of disease: Patients experience continuous or recurrent generalized tonic-clonic movements, which look like jerking muscle contractions or stiffening, or focal seizures, which look like episodes of staring (Capriotti, 2020). Patients will experience altered or loss of consciousness during the seizures (Capriotti, 2020). They may have a loss of bladder or bowel due to the loss of muscle control (Capriotti, 2020). They may experience symptoms before the seizure, like déjà vu or an aura (Capriotti, 2020). In SE, patients experience prolonged seizures that last longer than 5 minutes or have multiple seizures in a row without recovery, which can cause respiratory issues as they are unable to maintain their airway (Capriotti, 2020). Signs of respiratory failure include labored breathing, central or peripheral cyanosis, grunting, use of accessory muscles, increased work of breathing, diminished breath sounds, low heart rate, and hypotension (Capriotti, 2020). After the seizure, they enter a post-ictal state where they have an altered mental status or may seem drowsy (Capriotti, 2020).

Method of Diagnosis: SE with respiratory failure is diagnosed with a combination of assessments and diagnostic tests. There is an evaluation of the patient's seizure history, including the duration and nature of seizure activity, and any prior neurological issues (Lee, 2020). A neurological assessment is done to evaluate level of consciousness and motor function (Lee, 2020). An electroencephalography (EEG) is used to show and verify seizure activity (Lee, 2020). A CT or MRI scan may be done to visualize the brain to determine the reason for the seizure activity (Lee, 2020). Vital signs, specifically oxygen saturation and respiratory rate, are monitored for signs of respiratory distress (Capriotti, 2020). Laboratory tests, including arterial blood gases, are performed to assess for hypoxemia and respiratory acidosis (Capriotti, 2020).

Treatment of disease: In SE without an underlying cause, antiepileptic drugs are used (Capriotti, 2020). Ion channels in the neurons are altered with these medications, which reduces the risk of hyperexcitability of the neurons (Capriotti, 2020). If medication does not work, surgical intervention may be needed. These surgeries may include the removal of part of the parietal or temporal lobe, placement of a vagus nerve stimulator, or removal of masses or bleeds (Capriotti, 2020). Some seizures can be treated without antiepilepsy drugs if the seizures are due to an underlying cause, like trauma or infection (Capriotti, 2020). Respiratory failure is treated by managing oxygenation and airway patency (Capriotti, 2020). Supplemental oxygen is administered, preferably with non-invasive ventilation methods, such as continuous positive airway pressure (CPAP) or bilevel positive airway pressure (BiPAP) (Capriotti, 2020). For patients who risk losing their airways or who are experiencing severe levels of respiratory depression, intubation and mechanical ventilation may be necessary, as with this patient (Capriotti, 2020).

Relevant Lab Values/Diagnostics

Chest XR 10/3/24: ET tube in place, atelectasis noted in bilateral lungs. The atelectasis is relevant to her status epilepticus as the seizure activity caused her airway to collapse, leading to atelectasis and the need for an ET tube.

Brain CT 10/3/24: Hypoattenuation of the left temporal lobe. This is relevant to her diagnosis because it could indicate an issue in her brain that is causing the seizure activity.

Brain MRI 10/3/24: Focus of abnormal signal in the left frontal subcortical white matter, consider scar/gliosis or low-grade neoplasm. This is important as she is having seizures and the abnormality seen on this MRI could indicate the reason for her seizure activity.

Long-term EEG 10/4/24: No seizure activity. This is important because it shows she remained seizure-free during her stay and was able to be extubated.

Medical History

Previous Medical History: Seizure, Global Developmental Delay, Autism, Nonintractable Epilepsy with Status Epilepticus, Recurrent Croup, Speech Delay, Hearing Loss, Vision Problems, Congenital Cholesteatoma, Exotropia

Prior Hospitalizations: 12/11/14 - Respiratory Distress Syndrome at birth (2-week NICU stay with intubation); 1/14/22 - Mastoidectomy with post-operative observation; 2/7/24 - Seizure-like activity; 4/15/24 - Pneumonia

Past Surgical History: Tonsillectomy with adenoidectomy (7/29/16); Nasal/sinus endoscopy (7/29/16); Polyp removal of the right external auditory canal (7/29/16); Mastoidectomy (1/14/22); Myringotomy with tubes, bilateral (8/26/16); Typanomastoidectomy (9/26/16) with revision (5/13/19); Tympanoplasty x3 (8/27/18, 11/9/18, 12/17/18)

Social needs: ABA therapy, social work consult

Active Orders

Consult Wound Care: this is important for the treatment of the skin tear on her left cheek and forehead abrasions.

Consult Child Life Specialist: this is important for invasive procedures so that distraction techniques can be used for relaxation.

Vital signs every 4 hours: this is typical per unit policy. It is especially important for this patient to monitor for respiratory distress.

Clear liquid diet, advance as tolerated: the patient was initially NPO post-extubation for aspiration prevention, but is now able to advance to clear liquids. She is still being watched for potential aspiration after intubation.

Consult Neurology: this order is necessary due to seizure activity. She will also need neurology for outpatient follow-up.

Consult social work to assist with finding ABA therapy and group classes for social interactions/coping.

Assessment	
General	Patient is alert and oriented to person, place, and time. She is slightly teary, calm, and cooperative with instruction during assessment. She appears in no acute distress.
Integument	Skin color is light and appropriate for ethnicity. Skin is warm and damp, patient is slightly diaphoretic, which may be due to being immediately post-extubation. Skin tear noted to left cheek from ET tube holder. Skin abrasion noted to forehead from EEG leads. Nail beds are pink and without cyanosis or clubbing. Normal skin turgor mobility. Capillary refill is less than 3 second.
HEENT	Head and neck and midline and symmetrical. Trachea is midline and without deviation. Throat is scratchy and voice is hoarse from ET tube, reports difficulty swallowing. Diminished gag reflex. PERRLA and 3mm bilaterally. Periorbital swelling, itching, redness, and tears noted in left eye, cause is unknown. Scleral edema noted in right eye, cause is unknown. No lumps, lesions, or drainage from bilateral ears. Septum is midline and without deviation, turbinates are moist and pink, and no drainage or bleeding is noted bilaterally. Normal dentition.
Cardiovascular	Patient is tachycardic at 125 bpm. Normal rhythm. S1 and S2 present without any gallops, murmurs, or rubs. Brachial pulses palpable bilaterally, +2. Pedal pulses palpable bilaterally, +2.
Respiratory	Normal rate, rhythm, and depth of respirations. Abdominal muscle use is noted, which is related to her respiratory failure and post-extubation status. No wheezes, crackles, or rhonchi.
Genitourinary	Patient is incontinent and uses pullups due to developmental delays, due to the patient's autism. Changed 4x during shift. Increased urine production, which may be due to her extubation, no signs of pain with urination. Output: 400mL at 1346, 443mL at 1512, and 300mL at 1628.
Gastrointestinal	Abdomen is soft, no signs on pain on palpation. No organomegaly or masses are noted. Normoactive bowel sounds in all four quadrants. Flatus noted, parents state this is normal for this patient.
Musculoskeletal	Bilateral lower extremity weakness. Full range of motion in all four extremities. Patient ambulating with assistance, gait is unsteady. Muscle tone is diminished.
Neurological	GCS 15. Patient is alert, arousable, and oriented. Patient speaks with a slight speech delay. No seizure activity at this time.
Most recent VS (highlight if abnormal)	<p>Time: 1600</p> <p>Temperature: 98.4 F</p> <p>Route: Oral</p> <p>RR: 24 bpm</p> <p>HR: 125 bpm</p> <p>BP and MAP: 96/58 (MAP 72)</p> <p>Oxygen saturation: 99%</p>

	Oxygen needs: Room Air
Pain and Pain Scale Used	0 – FACES scale

<p align="center">Nursing Diagnosis 1</p> <p>Ineffective breathing pattern related to fatigue, neurological impairment, and respiratory impairment as evidenced by abdominal muscle use when breathing, diaphoresis, tachycardia, and post-extubation status (Phelps, 2023).</p>	<p align="center">Nursing Diagnosis 2</p> <p>Delayed child development related to congenital disorders as evidenced by decreased developmental, cognitive, and psychosocial level, learning needs, and history of diagnosis with autism spectrum disorder (Phelps, 2023).</p>	<p align="center">Nursing Diagnosis 3</p> <p>Risk for aspiration related to difficulty swallowing, neurological disease, depressed gag reflex, and recent extubation (Phelps, 2023).</p>
<p align="center">Rationale</p> <p>This patient was intubated due to respiratory failure after a seizure. She was extubated earlier in the day and is recovering from her respiratory failure. She is diaphoretic, tachycardic and uses her abdominal muscles to breathe. All of these signs along with her history show she has an ineffective breathing pattern.</p>	<p align="center">Rationale</p> <p>This patient has a history of global delays and autism. She is cognitively and psychosocially behind what is expected. She has special learning needs. Due to this, she is delayed developmentally.</p>	<p align="center">Rationale</p> <p>This patient is at risk for aspiration due to being extubated in the morning and not fully developing a gag reflex yet. She could also aspirate if she seized again.</p>
<p align="center">Interventions</p> <p>Intervention 1: Assess the respiratory system as ordered and observe for respiratory distress (Phelps, 2023). Intervention 2: Elevate the head of the bed (Phelps, 2023).</p>	<p align="center">Interventions</p> <p>Intervention 1: Provide assistance with activities of daily living and encourage the patient to participate in that care as she is able to (Phelps, 2023). Intervention 2: Educate parents on coping skills to effectively deal with the patients needs (Phelps, 2023).</p>	<p align="center">Interventions</p> <p>Intervention 1: Remain NPO until gag and cough reflex occur, or until cleared by speech therapy (Phelps, 2023). Intervention 2: Set up suction to clear airway as needed (Phelps, 2023).</p>
<p align="center">Evaluation of Interventions</p> <p>The patient demonstrates normal rate, rhythm, and depth of breathing with a respiratory assessment within normal limits (Phelps, 2023).</p> <p>This patient initially showed ineffective breathing patterns. Respiratory assessments were done frequently, and the head of the bed was elevated.</p>	<p align="center">Evaluation of Interventions</p> <p>The patient shows improved social interactions and increased level of development (Phelps, 2023).</p> <p>This patient’s parents were very knowledgeable about ASD and the necessary therapies to increase developmental abilities. The patient is able to do some ADL’s and is continuing occupational and</p>	<p align="center">Evaluation of Interventions</p> <p>Auscultation of the respiratory system remains clear, equal, and without adventitious breath sounds (Phelps, 2023).</p> <p>The patient was not given anything to eat or drink until she eventually developed a gag reflex. Once the gag reflex appeared, she was offered ice and</p>

<p>She began to breathe with less effort and use her accessory muscles less as the shift progressed. These interventions will continue.</p>	<p>behavioral therapy to improve on these skills.</p>	<p>then clear liquids. Suction remained on if needed, and the patient did not show any signs of aspiration when advanced to clear liquids.</p>
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Erickson's Psychosocial Developmental Stage	Industry vs. Inferiority (Rudd & Kocisko, 2023).	Children in this stage will begin to compare themselves to their peers and find pride in their academic or athletic accomplishments and family or social circles (Rudd & Kocisko, 2023). If negative responses during these activities occur, they may feel inferior. With positive experiences, they gain confidence and may be successful in what they try (Rudd & Kocisko, 2023). They learn to cope with the new academic and social stressors during this time (Rudd & Kocisko, 2023).	This patient had a global developmental delay, meaning she had delays in multiple milestone areas. She was developmentally in the initiative vs. guilt stage, as she was eager to play, build things, and was excited to leave to play with friends (Rudd & Kocisko, 2023). She was in pull-ups and felt guilty when she was incontinent (Rudd & Kocisko, 2023). She did not compare herself to her peers and did not have a sense of why she was in the hospital, so she was not learning to cope with her stressors yet (Rudd & Kocisko, 2023).
Piaget's Cognitive Developmental Stage	Concrete operational (Rudd & Kocisko, 2023).	In this stage, children begin to develop abstract thought and can understand that events happen without their involvement (Rudd & Kocisko, 2023). They develop an understanding of conservation, which is that the size, appearance, or volume of objects can change but the object can remain the same, and reversibility, which is that some things can return back to the normal state and some cannot (Rudd & Kocisko, 2023). They can classify objects based on characteristics like color or shape (Rudd & Kocisko, 2023). They can also understand seriation, which is grouping objects based on size, like weight and height, or importance (Rudd & Kocisko, 2023).	Due to this patient's delays, she is in the preoperational stage. She was interested in playing pretend with her friends and mimicked her friends and animals at home (Rudd & Kocisko, 2023). She also did not understand that a small cup held the same amount as a bowl when she was given a snow cone (Rudd & Kocisko, 2023).
Age-Appropriate Growth &	1. Begin to show growth related to		

<p>Development Milestones</p>	<p>their gender (Rudd & Kocisko, 2023). 2. Have gained a sense of empathy. They can be sensitive to others' emotions (Rudd & Kocisko, 2023). 3. Able to do activities of daily living without the assistance of others (Rudd & Kocisko, 2023).</p>		
<p>Age-Appropriate Diversional Activities</p>	<p>1. Puzzles from 100-500 pieces (Rudd & Kocisko, 2023). 2. Video games that require skill or strategy (Rudd & Kocisko, 2023). 3. Painting or crafting (Rudd & Kocisko, 2023).</p>		

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