Medications

Ceftriaxone

- Dose: 344 mg, every 12 hours.
- Route: IVPB.
- Therapeutic class: Cephalosporin (Jones & Bartlett Learning, 2021).
- Pharmacological class: Cephalosporin (Jones & Bartlett Learning, 2021).
- Reason taking: Patient is taking medication for meningitis.
- Key assessment: determine whether the patient has had previous hypersensitivity reactions to cephalosporins, penicillin, and other beta-lactam agents or other drugs (Jones & Bartlett Learning, 2021).

Acetaminophen (Tylenol)

- **Dose**: 102.4 mg, every four hours PRN.
- Route: Oral.
- Therapeutic class: Antipyretic, nonopioid analgesic (Jones & Bartlett Learning, 2021).
- Pharmacological class: Nonsalicylate, para-aminophenol derivative (Jones & Bartlett Learning, 2021).
- Reason taking: For mild pain or fever.
- Key assessment: assess for an allergy to acetaminophen. Assess for pain. Assess for chronic conditions that warrant the use of acetaminophen (Jones & Bartlett Learning, 2021).

Demographic Data

Admitting diagnosis: Patient came in with a fever.

Age of client: 5 months

Sex: Male

Weight in kgs: 7.88 kg

Allergies: No known Allergies

Date of admission: 10-19-2023

Psychosocial Developmental Stage: Trust vs mistrust (Ricci et al., 2021).

Cognitive Development Stage: Sensorimotor (Ricci et al., 2021).

Admission History

The patient, a 24-week-old boy with sickle cell disease as his primary medical history, arrived at the emergency room with a fever and a 102.7-degree body temperature. He started coughing and experiencing nasal leakage on October 6, 2023. No vomiting has occurred, and the diarrhea stopped a few days ago. Except for today, Mom has not seen a fever spike since the first onset of symptoms. Mom took his rectal temperature this morning and discovered that he had a fever of 102 despite feeling warm. The patient consumed a small amount of formula throughout the day. He has become fussier. The patient had no apnea, cyanosis, and no visible rashes.

Pathophysiology

Disease process: Blood disorders like sickle cell disease are inherited. Because hemoglobin, the protein in red blood cells that carries oxygen to the body's tissues, is defective in sickle cell disease, the oxygen supply to the tissues is disrupted (Mayo Clinic, 2022). Hemoglobin-normal red blood cells have a smooth, disk-like form and are flexible, resembling doughnuts without holes. They have little trouble passing through the blood vessels. Due to their stiffness and stickiness, sickle cell hemoglobin-containing cells take the shape of a sickle or crescent, similar to the letter C (Mayo Clinic, 2022). When their oxygen supply is cut off, this can obstruct small blood arteries and the flow of healthy, normal, oxygen-carrying blood because the cells cling together, making it difficult for them to pass through blood vessels. The blockage can cause pain (Mayo Clinic, 2022).

S/S of disease: Here is a list of typical symptoms and consequences of sickle cell disease. Each person may experience symptoms differently. Acute chest syndrome, splenic sequestration, stroke, anemia, pain crisis or sickle crisis, jaundice, a yellowing of the skin, eyes, or mouth, and priapism can be some common complications of sickle cell disease (Mayo Clinic, 2022). It is best always to visit a healthcare professional for a diagnosis as the signs and symptoms of sickle cell disease might mimic those of other blood disorders or health issues.

Method of Diagnosis: The patient underwent a newborn screening showing that he has sickle cell disease; both of his parents have the trait. A provider will then request lab tests such as hemoglobin electrophoresis to determine the different forms of hemoglobin in the blood. This test will identify the baby's particular kind of sickle cell disorder (Baby's first test, 2022).

Treatment of disease: The usual goals of sickle cell disease management are to reduce or eliminate pain episodes, symptoms, and consequences. Medication and blood transfusions are possible treatment options. A stem cell transplant may reverse the condition in children and teenagers (Mayo Clinic, 2022). Between the ages of two months and at least five years, sickle cell disease patients may get penicillin; doing so aids in preventing infections like pneumonia, which can be fatal. Since infections can be severe, keeping up with all vaccines is crucial (Mayo Clinic, 2022). Antibiotics were given to the patient during their stay as a preventative measure to avoid flare-ups. The patient also had a fever and a temperature of 102.7 when they arrived at the emergency room, so it was crucial to administer Tylenol to lower the temperature and reduce pain. In sickle cell disease, it is common for specific labs to be abnormal, so it is essential to understand why treatment can be beneficial in preventing sickle cell patients from having a sickle crisis. In order for the patient's parents to recognize the symptoms and prevent a sickle crisis, they should become knowledgeable about the sickle cell disease illness process.

Relevant Lab Values/Diagnostics

MCV: 71.0 fL	**Normal range:** 74.1-87.5 fL. (Normal Values per epic charting system).	**Abnormal finding:** The patient MCV is low due to the patient having a diagnosis of sickle cell disease.
MCH: 24.3 pg	**Normal range:** 26.4-28.9 pg. (Normal Values per epic charting system).	**Abnormal finding:** The patient MCH is low due to the patient having a diagnosis of sickle cell disease.
RDW: 15.8%	**Normal range:** 12.4-15.3%. (Normal Values per epic charting system).	**Abnormal finding:** The RDW is elevated due to RBC beter ogenesty.
Absolute neutrophil: 8.91 10^3/uL. respiratory infection with a slight fever.	**Normal range:** 0.97-5.45 10^3/uL. (Normal Values per epic charting system).	**Abnormal finding: Neutrophils** Could be low due to possible infection. The patient had a previous upper
Absolute lymphocyte: 11.85 10^3/uL. upper respiratory infection with a slight fever.	**Normal range:** 2.45-8.89 10^3/uL (Normal Values per epic charting system).	**Abnormal finding**: lymphocytes could be elevated due to a possible infection. The patient had a previous
Absolute monocyte: 0.00 10^3/uL respiratory infection and patient having a diagnosis of sickle cell disease.	**Normal range:** 0.28-1.07 10^3/uL (Normal Values per epic charting system).	**Abnormal finding:** Monocytes could be low due to possible infection from previous symptoms of upper
Absolute eosinophil: 0.00 10^3/uL. respiratory infection and patient having a diagnosis of sickle cell disease.	**Normal range:** 0.03-0.61 10^3/uL (Normal Values per epic charting system).	**Abnormal finding:** Eosinphils could be low due to possible infection from previous symptoms of upper
Absolute Basophil: 0.00 10^3/uL respiratory infection and patient has a diagnosis of sickle cell disease.	**Normal range:** 0.01-0.06 10^3/uL (Normal Values per epic charting system).	**Abnormal finding:** Basophils could be low due to possible infection from previous symptoms of upper
Reticulocyte: 3.87% crisis. Trying to replenish RBC.	**Normal range:** 1.55-270% (Normal Values per epic charting system).	**Abnormal finding:** A high reticulocyte count suggest increased hemolysis and points to a sickle cell
Reticulocyte: 0.1591 10^6/uL crisis. Trying to replenish RBC	Normal range: 0.0482-0.0882 10^6/uL (Normal Values per epic charting system).	**Abnormal finding:** A high reticulocyte count suggest increased hemolysis and points to a sickle cell

Diagnostics

Chest x-ray AP or PA was done on the patient. No acute cardiopulmonary findings. Chest x-ray was normal.

Medical History

Previous Medical History: Abnormal newborn screen for suspected sickle cell disease.

Prior Hospitalizations: Patient was in the NICU for 12 days.

Past Surgical History: Circumcision (5-8-2023)

Social needs: Mom having transportation to get to the hospital for concerns for the patient and doctor visits. Mom not understanding the severity of sickle cell disease is another social need.

Active Orders

- Vital signs Q4 to monitor how the patient is doing and make sure temperature is in normal range.
- I/O per protocol
- IV access to administer IV fluids and have IV access.
- Urine culture to check the cause of fever.
- Continuous pulse ox to keep stats above 92%.

Assessment	
General	Alert and oriented to person, place, time, and situation, the patient is well groomed and in no acute distress
Integument	Skin is usual for ethnicity. Skin is dry and intact, with no rashes, lesions, or bruising. No drainage. Skin is warm and dry upon palpation. Capillary refills on the fingers & toes are less than 3 seconds bilaterally.
HEENT	The head is normocephalic and atraumatic. Neck is symmetrical. Bilateral carotid pulses are palpable and 2+. PERRLA bilaterally. EOMs intact bilaterally. No drainage or ear wax, hearing intact, bilateral auricles, no visible or palpable deformities, lumps, or lesions. The nose was not assessed. Oral mucosa pink and moist with good dentition.
Cardiovascular	S1 and S2 heard, no murmur or extra heart sounds. Regular rate and rhythm. Peripheral pulses 2+, bilaterally, and symmetrical. Capillary refill less than 3 seconds on fingers and toes. No edema noted.
Respiratory	Normal rate and pattern of respiration. Symmetrical and non-labored. Breath sounds, clear throughout. No wheezes or crackles noted.
Genitourinary	Genitals were not assessed. The patient had 3 wet diapers within defined limits, adequate output for age during the student nurse's shift.
Gastrointestinal	no drainage. Last bowel movement was 10-19-2023 in the afternoon at 1500 pm, bowels were formed and brown. Bowel sounds are normoactive in all four quadrants. Abdomen is soft, no tenderness, and no masses. No abdominal distention, no incisions, drains, or wounds.
Musculoskeletal	All extremities have full range of motion. Hand grips demonstrate equal strength bilaterally. Pedal pushes and pulls were not assessed.
Neurological	Patient was fussy so could not assess this part of the assessment.
Most recent VS (highlight if abnormal)	**Time:** 1624 pm **Temperature**: 98.2 F **Route:** Axillary **RR:** 24 **HR:** 128 bpm **BP and MAP:** 133/76 Map: 77 mmHg **Oxygen saturation:** 100 **Oxygen needs:** Room air
Pain and Pain	Patient was not in any pain. FLACC pain scale was used.

Scale Used	

Nursing Diagnosis 1	Nursing Diagnosis 2	Nursing Diagnosis 3
Impaired gas exchange related to potential for hypoxia as evidence by damaged RBC (Phelps, 2020).	Risk for febrile seizure related to skin warm to touch as evidence by patients' temperature being elevated at 102.7 F (Phelps, 2020).	Deficient knowledge related to disease process as evidence by the patients Mom stating, "she does not know much about sickle cell disease" (Phelps, 2020).
Rationale This nursing diagnosis was chosen because in sickle cell patients the RBC are sickled or crescent shaped. Cells with sickle cell hemoglobin are stiff and sticky and can not move properly through the blood vessels.	**Rationale** This nursing diagnosis was chosen because the patient came in with a elevated temperature of 102.7 F and if temperature is not regulated the patient can potentially be at risk for febrile seizures.	**Rationale** This nursing diagnosis was chosen to educate the mother about sickle cell disease, and to watch for signs and symptoms that may trigger a Vaso-occlusive crisis.
Interventions **Intervention 1:** Used a continuous pulse oximeter to monitor oxygen saturation (Phelps, 2020). **Intervention 2:** The nurse administers fluid bolus as ordered (Phelps, 2020).	**Interventions** **Intervention 1:** The nurse will implement seizure precautions (Phelps, 2020). **Intervention 2:** The nurse will administer antipyretic medication to relieve temperature (Phelps, 2020).	**Interventions** **Intervention 1: E**ducate the patient by providing handouts that explain the severity of sickle cell disease (Phelps, 2020). **Intervention 2: T**each the patient to watch out for signs and symptoms of crisis for sickle cell disease (Phelps, 2020).
Evaluation of Interventions Administering fluids and monitoring oxygen levels will treat the underlying cause of impaired gas exchange and improve oxygenation status. Patient will have a oxygen level within normal range (Phelps, 2020).	**Evaluation of Interventions** The patients will maintain core body temperature within normal limits (Phelps, 2020).	**Evaluation of Interventions** The mother understands the severity of sickle cell disease and how to properly look for signs and symptoms of a Vaso-occlusive crisis (Phelps, 2020).

References (3):

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Mayo Clinic. (2022). *Sickle cell anemia*. Mayo Clinic. https://www.mayoclinic.org/diseases-conditions/sickle-cell-anemia/diagnosis-treatment/drc-20355882

Ricci, S. S., Kyle, T., & Carman, S. (2021). *Maternity and pediatric nursing* (4th ed.). Wolters Kluwer.

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