

N433 Care Plan # 1

Lakeview College of Nursing

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Demographics (3 points)

Date of Admission 1/28/21	Patient Initials CM	Age (in years & months) 11 years, 10 months	Gender Male
Code Status Full Code	Weight (in kg) 54.7	BMI 24.5	Allergies/Sensitivities (include reactions) No known allergies

Medical History (5 Points)**Past Medical History:**

Illnesses: CM has no significant previous medical history.

Hospitalizations: CM has no previous hospitalizations.

Past Surgical History: The patient was circumcised as a neonate.

Immunizations: The client is up to date on all immunizations.

Birth History: CM was delivered at full term with no complications.

Complications (if any): n/a

Assistive Devices: n/a

Living Situation: The client lives at home with his mother, father, and older brother.

Admission Assessment

Chief Complaint (2 points): Seizures

Other Co-Existing Conditions (if any): hypoparathyroidism, hypocalcemia.

Pertinent Events during this admission/hospitalization (1 points):

After presenting to the emergency department, laboratory testing revealed hypocalcemia. Other abnormal lab findings include low 25-hydroxy vitamin D, elevated monocytes, low parathyroid

hormone, hypochloremia, and proteinuria. At present, CM is having I-STAT chemistry panels drawn every 8 hours. Over the course of his stay, his calcium ion levels have been trending up. CM also had a CT scan performed, which did not reveal any acute hemorrhage. However, the interpreting physician believes that areas of calcification on the CT suggest possible congenital infection. He additionally remains on cardiac monitoring. ECG this shift has shown normal sinus rhythm with no PVCs. Future diagnostic work likely includes an MRI, although his attending has not yet ordered one or determined if it will be done as an inpatient or on an outpatient basis.

History of present Illness (10 points):

On the evening of 1/28/21, CM began experiencing tremors after dinner which progressed into an apparent seizure. His parents report witnessing the episode, after which they called EMS. The seizure was generalized, with a duration and postictal period of 1 minute and 25 minutes, respectively. This is the first occasion that CM has had an observed seizure, but his parents note several events over the past few months that they retrospectively feel may have indicated seizure activity. Specifically, they recall three instances of bedwetting and “a few times” that they suspect CM bit his tongue in his sleep after waking with blood in his mouth. CM cannot recall the seizure itself and states “the first thing I can remember is being on the ambulance.” Since arriving at Carle, no suspected seizure activity is reported by the client or observed by family or staff. The client is not aware of any aggravating factors. He does report that he feels better after getting some rest, but “still feels tired.” This hospitalization is the first occasion that CM has been evaluated or treated for seizures. At present, his hypocalcemia is being managed with a combination of calcium gluconate, calcium carbonate, and calcitriol. Furthermore, in the event of a seizure lasting more than three minutes, he has orders for PRN lorazepam available. CM has not yet needed any lorazepam. This nurse does not observe any seizure activity this shift.

However, regarding severity, his parents' description of the event is consistent with a generalized seizure. By their estimation, the seizure lasted approximately one minute. The postictal period was approximately 25 minutes.

Primary Diagnosis

Primary Diagnosis on Admission (2 points): Hypoparathyroidism

Secondary Diagnosis (if applicable): Hypocalcemia

Pathophysiology of the Disease, APA format (20 points):

Hypoparathyroidism refers to diminished or absent production of parathyroid hormone (PTH) by the parathyroid glands. (Hinkle & Cheever, 2018; Mayo Clinic, 2020a). Normally, the body uses PTH to regulate calcium and phosphate levels (Mayo Clinic, 2020b). PTH increases blood calcium by stimulating the intestinal absorption, renal resorption, and release from bones of calcium (Hinkle & Cheever, 2018). Moreover, PTH decreases phosphorus levels by stimulating phosphate's renal excretion (Hinkle & Cheever, 2018; Brandi et al., 2016). Thus, when PTH production is inadequate, hypocalcemia and hyperphosphatemia may result (Hinkle & Cheever, 2018). Hypoparathyroidism's pathophysiological basis can vary, but the most common causes are damage to or destruction of the parathyroid glands, especially following neck surgery (Hinkle & Cheever, 2018; Mayo Clinic, 2020a). Less frequently, the condition can result from autoimmune disease, genetic predisposition, other endocrine disorders, or hypomagnesemia (Mayo Clinic, 2020a; Brandi et al., 2016; Hinkle & Cheever, 2018). At the time of this encounter, the etiology of CM's hypoparathyroidism is still under investigation.

Whatever the reason parathyroid hormone levels are inadequate, the physiologic consequence is that normal calcium and phosphate regulation is impaired. Hypoparathyroidism's

clinical manifestations result from these electrolyte disturbances, with hypocalcemia being considered characteristic of the condition (Brandi et al., 2016). Clients with hypoparathyroidism may present with positive Chvostek or Trousseau signs (Hinkle & Cheever, 2018). However, the condition's onset is generally gradual, and symptoms are often mild or nonspecific (Hinkle & Cheever, 2018; MedlinePlus, 2020). Occasionally, clients are asymptomatic, and their diagnosis is incidental following abnormal lab tests (Brandi et al., 2016). Tetany resulting from hypocalcemia is considered the primary symptom associated with hypoparathyroidism (Hinkle & Cheever, 2018). With latent tetany, the patient may experience paresthesias, cramping, or stiffness in their extremities (Hinkle & Cheever, 2018). Overt tetany may cause abnormal flexion of the elbows and wrists, dysrhythmias, hypotension, difficulty swallowing, photophobia, seizures, spasms of the bronchus and larynx, anxiety, depression, and delirium (Hinkle & Cheever, 2018). In children, tooth enamel may be weak (MedlinePlus, 2020). CM presented to Carle's emergency department following a seizure. His parents recall in retrospect recent events that raise suspicion of past seizure activity. Specifically, CM has wet the bed three times in the past six months and, on several occasions, has bitten his tongue in his sleep. Furthermore, CM recently had a molar erupt without enamel. On the date of this student's encounter with CM, he complains only of fatigue.

Hypoparathyroidism is diagnosed primarily by laboratory testing. The key findings are low serum calcium and PTH (Brandi et al., 2016). Serum phosphorus elevation is also an expected finding (Mayo Clinic, 2020). Vitamin D will typically be at a low-normal level and is useful to rule out other hypocalcemia causes (Brandi et al., 2016). Because both high and low magnesium can interfere with PTH levels and mimic hypoparathyroidism, the provider may check magnesium (Brandi et al., 2016). Imaging studies such as X-rays may reveal increased

bone density and calcification of the brain's subcutaneous or paraspinal basal ganglia (Hinkle & Cheever, 2018, MedlinePlus, 2020). After diagnosis, the client may have additional testing to evaluate the efficacy of treatment or investigate etiology (Brandi et al., 2016; Jones & Bartlett Learning, 2019; MedlinePlus, 2020). Genetic testing can help determine if the client's hypothyroidism is due to conditions like DiGeorge's syndrome or polyglandular deficiency (Brandi et al., 2016). Because dysrhythmias and ECG changes can result from hypocalcemia and as a complication of calcium replacement therapy, the client should have ECG monitoring (Brandi et al., 2016; Holman et al., 2019; Hinkle & Cheever, 2018; Jones & Bartlett Learning, 2019). Lab work should also include Vitamin D levels to screen for vitamin D toxicity during replacement therapy (Jones & Bartlett Learning, 2019).

CM's initial testing included a CBC, CMP, urinalysis, and CT scan of the brain. The results of his CBC were unremarkable, apart from an elevated monocyte count. The high monocyte count could suggest viral involvement (Mayo Clinic, 2020c). CM's CMP featured elevated phosphate and low levels of chloride, vitamin D 25-hydroxy, and calcium. His magnesium levels were within normal limits, and his PTH level was low. A diagnosis of hypoparathyroidism is supported in CM by his increased phosphate and decreased levels of vitamin D, calcium, and PTH (Brandi et al., 2016). His CT scan reveals areas consistent with calcification in his subcortical white matter but was otherwise unremarkable. His provider suspects that these may be the result of congenital infection. CM remains on continuous ECG monitoring, which has shown normal sinus rhythm this shift. He also has ISTAT chemistry draws every 6 hours. Finally, his physician anticipates ordering an MRI but has not determined whether the test should be on an inpatient or outpatient basis.

Nursing management for hypoparathyroidism involves assessing for potential complications and preparing clients to deal with them. The nurse should monitor telemetry on the client with acute hypoparathyroidism because calcium administration can cause lethal dysrhythmias (Hinkle & Cheever, 2018; Jones & Bartlett Learning, 2019). The client will also need monitoring for hypocalcemia signs such as tetany, seizures, or dyspnea (Hinkle & Cheever, 2018). If ordered, the nurse should administer intravenous calcium gluconate slowly and be vigilant for extravasation or infiltration (Hinkle & Cheever, 2018; Jones & Bartlett Learning, 2019). Finally, the nurse should educate patients on their medications, the signs and symptoms of calcium imbalances, and, if indicated, dietary changes (Hinkle & Cheever, 2018). CM is presently on fall precautions, which his clinical presentation following seizure activity warrants. Furthermore, CM's nurses check his vital signs and perform neurological assessments on him every 8 hours. He also remains on telemetry, which the nursing staff monitors.

Treatment centers on correcting hypocalcemia. The underlying cause is often intractable, and the client will need to remain on maintenance doses of calcium and activated vitamin D for life (MedlinePlus, 2020; Brandi et al., 2016). The purpose of vitamin D supplementation is to facilitate the uptake of calcium (Jones & Bartlett Learning, 2019). In some cases, synthetic parathyroid hormone is given (MedlinePlus, 2020). To increase his calcium levels, CM is receiving IV calcium gluconate and oral calcium carbonate. He is taking oral calcitriol as his adjunct vitamin D supplement. He is responding to therapy, and his calcium level has been trending up on his ISTATs. Since arriving at Carle, the client has not had any seizure activity, but he also has PRN lorazepam orders for seizures lasting longer than 3 minutes.

Two potential complications associated with hypothyroidism are seizures and arrhythmias (Mayo Clinic, 2020a). Regarding seizures, it is important to distinguish that while

seizures due to hypocalcemia may be resolved with treatment, seizures secondary to calcification of the brain associated with hypoparathyroidism are not (Mayo Clinic, 2020a). Seizures can differ in their presentation based on the type and may be broadly categorized as generalized, partial, or idiopathic (Holman et al., 2019). A generalized tonic-clonic seizure is often preceded by an aura and involves both a tonic phase wherein the muscles stiffen and a clonic phase wherein the extremities jerk rhythmically for 1-2 minutes (Holman et al., 2019). During a tonic-clonic seizure, the client may have periods of apnea or irregular respiration, biting of the cheek or tongue, cyanosis secondary to altered respiration, or incontinence (Holman et al., 2019). Following the seizure, a post-ictal period marked by drowsiness and confusion occurs (Holman et al., 2019). One arrhythmia that can occur due to hypocalcemia is Torsades de Pointes (Holman et al., 2019). While the condition is often asymptomatic, when symptoms are present, they most frequently include syncope, palpitations, and dizziness (Cohagan & Brandis, 2020). The characteristic ECG for Torsades de Pointes has the appearance of the QRS complexes twisting around the isoelectric line (Cohagan & Brandis, 2020). If left untreated, Torsades de Pointes can progress into ventricular fibrillation or sudden cardiac death (Cohagan & Brandis, 2020). Because both seizures and arrhythmias result from low calcium levels, to prevent them, in addition to monitoring lab results, the nurse should assess the client for early signs and symptoms of hypocalcemia (Hinkle & Cheever, 2018; Mayo Clinic, 2020a). Regarding Torsades de Pointes, a prolonged QT interval is requisite to its occurrence (Cohagan & Brandis, 2020). Thus, to prevent Torsades de Pointes, nurses should monitor the patient's ECG for a prolonged QT interval or other changes; doing so affords the opportunity to pursue corrective medical action before Torsades de Pointes develops (Cohagan & Brandis, 2020).

Pathophysiology References (2) (APA):

Brandi, M. L. Bilezikian, J. P., Shoback, D., Bouillon, R., Clarke, B. L., Thakker, R. V., Khan, A. A., & Potts, J. T. (2016). Management of hypoparathyroidism: Summary statement and guidelines. *The Journal of Clinical Endocrinology & Metabolism*, 101(6), 2273-2283. <https://doi.org/10.1210/jc.2015-3907>

Cohagan, B, & Brandis, D. (2020). *Torsade de pointes*. National Center for Biotechnology Information. <https://www.ncbi.nlm.nih.gov/books/NBK459388/>

Hinkle, J. L., & Cheever, K. H. (2018). *Brunner & Suddarth's textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer.

Holman, H.C., Williams, D., Sommer, S., Johnson, J., Ball, B. S., Wheless, L., Leehy, P., & Lemon, T. (2019). *RN adult medical surgical nursing review module* (11th ed.). Assessment Technologies Institute, LLC.

Jones & Bartlett Learning (2019). *2019 nurse's drug handbook*. Jones & Bartlett, LLC.

Mayo Clinic. (2020a). *Hypoparathyroidism*. <https://www.mayoclinic.org/diseases-conditions/hypoparathyroidism/symptoms-causes/syc-20355375>

Mayo Clinic. (2020b). *Hyperparathyroidism*. <https://www.mayoclinic.org/diseases-conditions/hyperparathyroidism/symptoms-causes/syc-20356194#:~:text=The%20parathyroid%20glands%20produce%20parathyroid,on%20calcium%20for%20proper%20functioning>

Mayo Clinic (2020c). *Pediatric white blood cell disorders*. <https://www.mayoclinic.org/diseases-conditions/pediatric-white-blood-cell-disorders/symptoms-causes/syc-20352674#:~:text=Monocytes%20help%20get%20rid%20of,Eosinophilia>.

MedlinePlus. (2020). *Hypoparathyroidism*. <https://medlineplus.gov/ency/article/000385.htm>

Active Orders (2 points)

Order(s)	Comments/Results/Completion
Activity: As tolerated with fall precautions.	The client is up to use the restroom and shower this shift with supervision. CM tolerates ambulation well this shift.
Diet/Nutrition: Regular	CM consumes most of his lunch this shift, eats 100% of his afternoon snack, and reports being hungry at dinner time.
Frequent Assessments: Vital signs every 8 hours, neuro checks every 8 hours, and continuous cardiac monitoring.	Vital signs this shift are within normal limits. The client's neurological assessment did not reveal any abnormal findings. CM's ECG shows normal sinus rhythm with no PVCs.
Labs/Diagnostic Tests: ISTAT panel every 6 hours, MRI (Inpatient vs Outpatient).	CM continues to have ISTATs every 6 hours. His serum calcium has been trending upwards. His physician anticipates an MRI but is yet to determine whether it should be done on an inpatient or an outpatient basis.
Treatments: Intravenous and oral medications	The client's course of treatment presently centers on the correction of concurrent hypocalcemia. In addition to oral calcium carbonate, the client receives intravenous calcium gluconate and oral calcitriol.
Other:	No seizure activity is reported or observed

Notify MD if client has a seizure lasting more than three minutes.	this shift.
New Order(s) for Clinical Day	
Order(s)	Comments/Results/Completion
ACTH (one time only)	The results remain pending at the end of the clinical shift.

Laboratory Data (15 points)

CBC **Highlight All Abnormal Labs**—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab	Normal Range (specific to the age of the child)	Admission or Prior Value	Today's Value	Reason for Abnormal Value
RBC (x10 ⁶ /uL)	4.03-5.29	4.5	N/A	N/A
Hgb (g/dL)	11-14.5	12.3	N/A	N/A
Hct (%)	33.9-43.5	36.3	N/A	N/A
Platelets (x10 ³ /uL)	175-352	289	N/A	N/A
WBC (x10 ³ /uL)	3.84-9.54	5.83	N/A	N/A

Neutrophils ($\times 10^3/\mu\text{L}$)	1.54-7.04	2.42	N/A	N/A
Lymphocytes ($10^3/\mu\text{L}$)	0.97-3.26	2.46	N/A	N/A
Monocytes ($\times 10^3/\mu\text{L}$)	0.18-0.78	0.9	N/A	An elevation in monocytes may suggest an infectious or autoimmune etiology for CM's hypoparathyroidism (Mayo Clinic, 2020b).
Eosinophils ($\times 10^3/\mu\text{L}$)	0.04-0.36	0.03	N/A	Mayo Clinic Laboratories provides a reference range for 3-11 year old males of 0.0-0.50 $\times 10^9/\text{L}$ (Mayo Clinic Laboratories, n.d.). Following this reference range, CM's eosinophils would be at an expected level.
Basophils ($\times 10^3/\mu\text{L}$)	0.01-0.05	0.01	N/A	N/A
Bands (%)	3-5%	N/A	N/A	N/A

Chemistry Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab	Normal Range	Admission or Prior Value	Today's Value (1/29/21 chemistry was ISTAT)	Reason For Abnormal
Na- (mmol/L)	136-145	136	140	N/A
K+ (mmol/L)	3.5-5	4.1	3.7	N/A
Cl- (mmol/L)	98-107	100	97	It is noted in the literature that low chloride levels may be associated with antacid use (Abate & Clarke, 2016). CM reports regularly taking Tums at home. Furthermore, CM is being treated as an inpatient with oral

				calcium carbonate suspension to manage his hypocalcemia. Calcium carbonate is the active ingredient in Tums and several other brands of antacids (Jones & Bartlett Learning, 2019).
Glucose (mg/dL)	60-99	96	98	N/A
BUN (mg/dL)	7-18	9	9	N/A
Creatinine (mg/dL)	CMP (0.7-1.3) ISTAT (0.6-1.3)	0.78	0.6 **ISTAT**	N/A
Albumin (g/dL)	3.4-5	4.1	N/A	N/A
Total Protein (g/dL)	6.4-8.2	7.5	N/A	N/A
Calcium <ul style="list-style-type: none"> • On CMP (mg/dL) • On ISTAT (mmol/L) 	CMP (8.5-10.1) ISTAT (1.12-1.32)	5.4	0.64	Hypocalcemia is associated with hypoparathyroidism (Pagana et al., 2021). CM has been diagnosed with hypoparathyroidism.
Bilirubin (mg/dL)	0.02-1.0	0.4	N/A	N/A
Alk Phos (units/L)	54-369	256	N/A	N/A
AST (units/L)	15-37	34	N/A	N/A
ALT (units/L)	12-78	20	N/A	N/A
Amylase (units/L)	30-220	N/A	N/A	N/A
Lipase (units/L)	0-160	N/A	N/A	N/A
Magnesium (mEq/L)	1.6-2.6	2	N/A	N/A
Phosphate (mg/dL)	2.5-4.9	10	N/A	Elevated phosphate levels are associated with hypoparathyroidism and hypocalcemia (Pagana et al., 2021). CM has been diagnosed with both of these conditions.

25-Hydroxy Vitamin D (ng/mL)	30-100	29.3	N/A	Vitamin D plays a crucial role in the regulation of serum calcium levels. (Mayo Clinic, 2020a). When vitamin D levels are insufficient, calcium levels also drop (Mayo Clinic, 2020a). CM's low vitamin D level may be associated with his hypoparathyroidism (Mayo Clinic, 2020a).
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Other Tests Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab Test	Normal Range	Admission or Prior Value	Today's Value	Reason for Abnormal
ESR	< or = 10 mm/hr	N/A	N/A	N/A
CRP	< 1 mg/dL	N/A	N/A	N/A
Hgb A1c (%)	<5.7%	N/A	5.6%	N/A
TSH (mcIU/L)	0.358-3.740	N/A	0.437	N/A
PTH (pg/mL)	14-72	3	N/A	An abnormally low level of parathyroid hormone indicates hypoparathyroidism (Pagana et al., 2021). This is further supported by CM's concurrent hypocalcemia (Pagana et al., 2021).
Cortisol (mcg/dL)	3.09-16.66	N/A	3.62	N/A

Urinalysis Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab Test	Normal Range	Admission or Prior Value	Today's Value	Reason for Abnormal
Color & Clarity	Yellow	N/A	Yellow	N/A
pH	5-7	N/A	7	N/A

Specific Gravity	1.003-1.035	N/A	1.012	N/A
Glucose	negative	N/A	negative	N/A
Protein	negative	N/A	30 mg/dL	While protein in the urine can be associated with serious conditions, it is also a common finding in children that is generally transient and benign (Leung et al., 2017). Transient proteinuria can be a result of fever, exercise, stress, or cold exposure (Leung et al., 2017). CM is presently hospitalized following a seizure, which could cause significant stress and thus explain transient proteinuria.
Ketones	negative	N/A	Trace Note: Although the provided reference range in epic was “negative”, the result of “trace” was not flagged as abnormal in the Epic system.	N/A
WBC (per uL)	0-25	N/A	3	N/A
RBC (per uL)	0-20	N/A	4	N/A
Leukoesterase	negative	N/A	negative	N/A

Cultures **Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.**

Test	Normal Range	Admission or Prior Value	Today’s Value	Explanation of Findings
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Urine Culture	Negative	N/A	N/A	N/A
Blood Culture	Negative	N/A	N/A	N/A
Sputum Culture	Negative	N/A	N/A	N/A
Stool Culture	Negative	N/A	N/A	N/A
Respiratory ID Panel (COVID-19)	Negative	Negative	N/A	N/A

Lab Correlations Reference (1) (APA):

Abate, E. G., & Clarke, B. L. (2016). Review of hypoparathyroidism. *Frontiers in*

Endocrinology, 7, 172. <https://doi.org/10.3389/fendo.2016.00172>

EPIC reference ranges were used for normal values

GlobalRPh. (2017). *Laboratory values*. <https://www.globalrph.com/laboratory-values/>

Jones & Bartlett Learning (2019). *2019 nurse's drug handbook* (18th ed.). Jones & Bartlett, LLC.

Leung, A. K., Wong, A. H., & Barg, S. S. (2017). Proteinuria in children: Evaluation and

differential diagnosis. *American Family Physician*, 95(4), 248-254. <https://www.aafp.org/afp/2017/0215/p248.html>

Mayo Clinic (2020a). *Hyperparathyroidism*.

<https://www.mayoclinic.org/diseases-conditions/hyperparathyroidism/symptoms-causes/syc-20356194>

Mayo Clinic (2020b). *Pediatric white blood cell disorders*. [https://www.mayoclinic.org/diseases-](https://www.mayoclinic.org/diseases-conditions/pediatric-white-blood-cell-disorders/symptoms-causes/syc-20352674#:~:text=Monocytes%20help%20get%20rid%20of,Eosinophilia.)

[conditions/pediatric-white-blood-cell-disorders/symptoms-causes/syc-20352674#:~:text=Monocytes%20help%20get%20rid%20of,Eosinophilia.](https://www.mayoclinic.org/diseases-conditions/pediatric-white-blood-cell-disorders/symptoms-causes/syc-20352674#:~:text=Monocytes%20help%20get%20rid%20of,Eosinophilia.)

Mayo Clinic Laboratories (n.d.). *Complete blood count (CBC) with differential, blood*.

<https://www.mayocliniclabs.com/test-catalog/Clinical+and+Interpretive/9109>

Pagana, K. D., Pagana, T. J., & Pagana, T. N. (2021). *Mosby's diagnostic and laboratory test reference* (15th ed.). Elsevier.

Diagnostic Imaging

All Other Diagnostic Tests (5 points):

Computerized Tomography (CT) scan of brain without contrast, 1/28/21

During a CT scan, a series of x-rays are taken to give a three-dimensional image of the structures a provider wants to evaluate. A CT of the head is diagnostically useful for a variety of neurologic conditions including tumors, hemorrhage, brain atrophy, ventricular disorders, and the presence of fluid or abscess (Pagana et al., 2021). CM's presentation with seizure activity warranted a CT to investigate potential neurological etiology (Mayo Clinic, 2019).

Electrocardiography (ECG), 1/28/21-1/29/21

The ECG generates a graph representing the heart's electrical activity, which is measured by a series of electrodes or leads (Pagana et al., 2021). Characteristic waveforms and intervals on an ECG strip correspond to different phases in the cardiac cycle (Pagana et al., 2021). Moreover, the ECG may be used to identify deviations from normal cardiac function and diagnose conditions that cause them (Pagana et al., 2021). CM has hypocalcemia secondary to his hypoparathyroidism. Hypocalcemia is associated with risk of prolonged QT interval and torsades de pointes (Holman et al., 2019). Furthermore, he is being treated with intravenous calcium gluconate which can cause arrhythmias (Jones & Bartlett Learning, 2019). On this basis, continuous ECG monitoring is clinically appropriate until CM's calcium levels are stabilized within a safe range.

Diagnostic Test Correlation (5 points):

Computerized Tomography (CT) scan of brain without contrast, 1/28/21

Per the radiologist’s impression, CM’s CT image featured several areas in the subcortical white matter that suggest parenchymal calcification, possibly resulting from congenital infection. The scan reveals no hemorrhage or extra-axial fluid accumulation. CM’s basal cisterns are patent and his calvarium is intact.

Electrocardiography (ECG), 1/28/21-1/29/21

No abnormalities are noted on CM’s ECG. On the date of our encounter, this student observes a normal sinus rhythm with a rate of 84. No premature ventricular contractions are recorded this shift. CM remains under continuing telemetry due to his treatment with intravenous calcium gluconate which can potentially induce arrhythmias (Jones & Bartlett Learning, 2019).

Diagnostic Test Reference (1) (APA):

Holman, H.C., Williams, D., Sommer, S., Johnson, J., Ball, B. S., Wheless, L., Leehy, P., & Lemon, T. (2019). *RN adult medical surgical nursing review module* (11th ed.). Assessment Technologies Institute, LLC.

Jones & Bartlett Learning (2019). *2019 nurse’s drug handbook*. Jones & Bartlett, LLC.

Mayo Clinic (2019). *Grand mal seizure*. <https://www.mayoclinic.org/diseases-conditions/grand-mal-seizure/symptoms-causes/syc-20363458>

Pagana, K.D., Pagana, T. J., & Pagana, T. N. (2021). *Mosby’s diagnostic & laboratory test reference* (15th ed.). Elsevier.

Current Medications (8 points)
****Complete ALL of your patient’s medications****

Brand/ Generic	Ativan/ lorazepam (Jones &	calcium gluconate/ calcium gluconate	West Ward Pharmaceuticals Calcium Carbonate Oral Suspension/	Rocaltrol/ calcitriol (Prescriber’s Digital Reference,	< Instruc ted to fill out only
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	Bartlett Learning, 2019; Prescriber’s Digital Reference, n.d.-a).	(Jones & Bartlett Learning, 2019; WellRx, n.d.)	calcium carbonate	n.d.-b; Jones & Bartlett Learning, 2019)	these four meds.
Dose	2.736 mg	1g	2500 mg (=1000 mg elemental calcium)	0.5 mcg	N/A
Frequency	PRN for seizures lasting longer than 3 minutes.	Every 6 hours	Twice daily	Every 8 hours	N/A
Route	IV push	IV piggyback	PO	PO	N/A
Classification	Benzodiazepine/anticonvulsant	Elemental cation/antihypocalcemic	Elemental cation/antihypocalcemic	Sterol derivative/Vitamin D analogue	N/A
Mechanism of Action	Lorazepam functions as an anticonvulsant by hyperpolarizing neuronal cells, which inhibits their ability to generate seizures (Jones & Bartlett, 2019).	Calcium plays a critical role in the musculoskeletal and nervous systems. Furthermore, calcium is needed for the regulation of neurotransmitters and hormones. Calcium replacement medications increase intracellular and extracellular	Calcium plays a critical role in the musculoskeletal and nervous systems. Furthermore, calcium is needed for the regulation of neurotransmitters and hormones. Calcium replacement medications increase intracellular and extracellular levels of calcium ion (Jones & Bartlett Learning, 2019).	Calcitriol increases calcium absorption by binding its receptors on the intestinal mucosa. The medication may additionally stimulate calcium reabsorption in the renal tubule (Jones & Bartlett Learning, 2019).	N/A

		levels of calcium ion (Jones & Bartlett Learning, 2019).			
Reason Client Taking	Treatment for seizure activity	Treatment for hypocalcemia	Treatment for hypocalcemia	Treatment for hypoparathyroidism and hypocalcemia.	N/A
Concentration Available	2mg/mL	1g/100mL NaCl	1250mg (500mg elemental Calcium)/5 mL	1 tab = 0.5 mcg	N/A
Safe Dose Range Calculation	<p>0.05-0.1 mg/kg/dose with a maximum dose of 4 mg. (Prescriber's Digital Reference, n.d.-a).</p> <p>CM weighs 54.7 kg. His safe dose range is 2.735 mg – 4 mg.</p> <p>At a concentration of 2 mg/mL, CM's dose range would be between 1.37 mL and 2 mL.</p>	<p>100-200 mg/kg/dose with a maximum of 2 g/dose (WellRx, n.d.)</p> <p>CM weighs 54.7 kg. In his case, the lower end of the weight-based suggested dose range exceeds the maximum recommended 2 g/dose. (WellRx, n.d.).</p> <p>Given a 1 g/100 mL solution, CM could safely receive 200 mL every 6 hours as needed (WellRx,</p>	<p>Limited data is available and appropriate dosing depends on the client's condition and serum calcium level (Drugs.com, 2020). The suggested guideline for infants and children is 45-65 mg/kg/day of elemental calcium divided in to four doses for hypocalcemia (Drugs.com, 2020).</p> <p>CM weighs 54.7 kg. Thus, his minimum dose is given by:</p> <p>$[(54.7 \text{ kg} * 45 \text{ mg elemental calcium/kg}) / 4 \text{ dose}] = \underline{615.375 \text{ mg elemental calcium/dose}}$</p>	<p>Dosage is not weight based for idiopathic hypoparathyroidism or pseudohypoparathyroidism associated with hypocalcemia (Prescriber's Digital Reference, n.d.-b). The pediatric dosage for the above indication is 0.5 to 2 mcg PO once daily (Prescriber's Digital Reference, n.d.-b).</p>	N/A

		an.d.).	<p>CM’s maximum dose is given by:</p> $[(54.7 \text{ kg} \times 65 \text{ mg elemental calcium/kg}) / 4 \text{ dose}] = \underline{888.875 \text{ mg elemental calcium/dose.}}$ <p>Given a 500 mg elemental calcium/5 mL suspension, CM’s safe dose range would be 6.15 mL – 8.89 mL.</p>		
Maximum 24-hour Dose	<p>A specific maximum dose has not been established in children younger than 12. (Prescribers Digital Reference, n.d.-a). Prescribers are advised that the appropriate dosing depends on the route, the reason the drug is being used, and how the patient</p>	<p>For pediatric IV administration, a maximum of 2 grams can be given every six hours as needed. (WellRx, n.d.)</p> <p>If the above guideline is used, the 24-hour maximum dose for CM is 8 g.</p>	<p>Using the 45-65 mg/kg/day cited by Drugs.com (2020), CM’s 24-hour maximum dose of elemental calcium would be 3.56 g.</p> <p>Given a 500 mg elemental calcium/5 mL solution, CM would have a 24 hour maximum dose of 35.6 mL.</p>	<p>The maximum dose for CM’s indication in pediatric patients is 2 mcg daily (Prescriber’s Digital Reference, n.d.-b).</p>	N/A

	responds (Prescribers Digital Reference, n.d.-a).				
Contraindications (2)	-Acute angle closure glaucoma -Psychosis (Jones & Bartlett Learning, 2019)	- hypercalcemia - renal calculi (Jones & Bartlett Learning, 2019)	- hypercalcemia - renal calculi (Jones & Bartlett Learning, 2019)	-hypercalcemia -vitamin D toxicity (Jones & Bartlett Learning, 2019)	N/A
Side Effects/ Adverse Reactions (2)	- Drowsiness - Respiratory depression (Jones & Bartlett Learning, 2019)	- Paresthesia - Hypotension (Jones & Bartlett Learning, 2019)	-Irregular heartbeat -Hypercalcemia (Jones & Bartlett Learning, 2019)	-erythema multiforme -pruritis (Jones & Bartlett Learning, 2019)	N/A
Nursing Considerations (3)	-IV lorazepam should be given no faster than 2 mg/min. -The patient's respirations should be monitored every 5 to 15 minutes, and resuscitation equipment should be on hand. - Lorazepam	-Calcium gluconate solution should be warmed to room temperature before administration. - Check regularly for infiltration because calcium can cause tissue necrosis - Calcium should be administered slowly	- Store this medication at room temperature, and protect it from light, heat, and moisture. - Monitor serum calcium and screen for Chvostek's and Trousseau's signs. - Plan for administration of calcium carbonate 1-2 hours after meals to promote absorption.	-The nurse should be alert for signs of vitamin D toxicity in patients on high-dose or long-term therapy. Early signs of toxicity include abdominal or bone pain, constipation, dry mouth, headache, metallic taste, myalgia, nausea, somnolence, vomiting, and weakness. - Ensure the patient is receiving enough calcium. - This drug should be stored at room	N/A

	<p>should be tapered when discontinued to decrease the risk of withdrawal symptoms.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>using a small bore IV in a large vein.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>(Jones & Bartlett Learning, 2019)</p>	<p>temperature and protected from heat and light.</p> <p>(Jones & Bartlett Learning, 2019)</p>	
<p>Client Teaching needs (2)</p>	<p>-The patient should be advised to avoid hazardous activities until lorazepam's effects on their CNS are known.</p> <p>- Patients should report excessive drowsiness or nausea to their provider.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>- Educate the patient on the reason they need this medication.</p> <p>- The client should be advised to alert the nurse if they experience discomfort at the IV site; this may indicate that the IV rate is too fast.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>-The client should be advised to discuss any OTC drugs with their provider before taking to reduce the risk of drug interactions.</p> <p>- The client should be advised to avoid taking calcium within 2 hours of other oral drugs.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>- The patient should be advised to avoid taking other vitamin D supplements while on this medication, including in multivitamins.</p> <p>- The patient should notify their provider immediately if they experience headache, irritability, nausea, photophobia, vomiting, weakness, or weight loss. These may be signs of vitamin D toxicity.</p> <p>(Jones & Bartlett Learning, 2019)</p>	<p>N/A</p>

Medication Reference (APA):

Drugs.com (2020). *Calcium carbonate*. <https://www.drugs.com/ppa/calcium-carbonate.html#moreResources>

Jones & Bartlett Learning (2019). *2019 nurse’s drug handbook* (18th ed.). Jones & Bartlett, LLC.

Prescriber’s Digital Reference (n.d.-a). *Lorazepam – drug summary*. <https://www.pdr.net/drug-summary/Ativan-Injection-lorazepam-996>

Prescriber’s Digital Reference (n.d.-b). *Calcitrol – drug summary*. <https://www.pdr.net/drug-summary/Rocaltrol-calcitriol-929>

WellRx. (n.d.). *Calcium gluconate – NaCl*. <https://www.wellrx.com/calcium%20gluconate-nacl/monographs/>

Assessment

Physical Exam (18 points)

<p>GENERAL (1 point): Alertness: Alert Orientation: x4 Distress: no Overall appearance: Client appears to be his age. His hygiene is appropriate, and he looks physically healthy.</p>	<p>CM is A/O x4. He denies any discomfort or distress. The client’s demeanor is calm and pleasant, and he is cooperative with care. CM appears to be appropriately groomed, and in good physical condition.</p>
<p>INTEGUMENTARY (2 points): Skin color: Pale pink Character: Supple, clear, and intact. Temperature: Warm Turgor: Elastic Rashes: N/A Bruises: N/A Wounds: N/A Braden Score: 22 Drains present: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Type: N/A</p> <p>IV Assessment (If applicable to child): Size of IV: 20 g Location of IV: Right hand Date on IV: 1/28/21 Patency of IV: Patent. Patency verified with saline flush. Signs of erythema, drainage, etc.: N/A. IV dressing assessment: Dressing is clean, dry, and intact. IV Fluid Rate or Saline Lock: IV is</p>	<p>The client’s skin color is pale pink and is appropriate for his race. His skin is warm, dry, and intact. CM’s skin turgor is elastic, and the overall character of his skin is supple. A 20 gauge IV is present in the client’s right wrist. The IV is saline locked currently and its dressing is clean, dry, and intact. No rashes, bruises, or wounds are noted. No drains are present. CM’s Braden score is 22. The only category where the client did not receive an optimal score is activity. Although the client is physically capable of walking with no problems, ambulation is currently limited due to concerns of seizure activity. CM does get up to use the bathroom several times this shift and takes a shower in the evening. CM’s fall score of 22 places him in the average risk category.</p>

<p>saline locked at the time of assessment.</p>	
<p>HEENT (1 point): Head/Neck: Head normocephalic with dense, evenly distributed hair coverage. Trachea is midline and thyroid gland is neither enlarged nor displaced. Ears: Tympanic membranes visible, intact, and pearly-grey bilaterally. EOMI. Eyes: PERRLA. EOMI Nose: Nasal septum is midline. Turbinates are bilaterally equal. Teeth: Client is missing right bottom premolar. Dentition is otherwise intact. Teeth appear off-white. No obvious carries noted. Oral mucosa is pink, moist, and intact. Tonsils are 2+ bilaterally with no drainage noted. Thyroid: Non-enlarged.</p>	<p>The client’s head features normocephalic morphology. Hair is black in color with green highlights, dense and evenly distributed. No facial hair is present. The client’s trachea is midline and thyroid gland is neither enlarged nor displaced. No JVD is noted. Tympanic membranes are visible and pearly grey bilaterally. PERRLA and EOMI. The nasal septum is midline with turbinates equal bilaterally. Client denies epistaxis, congestion, excess mucus, visual problems, or any other HEENT complaints. CM’s oral mucosa is pink, moist, and intact. Client is missing a right bottom premolar, but dentition is otherwise intact with no obvious carries. The color of teeth is off-white. Tonsils are 2+ bilaterally with no drainage noted.</p>
<p>CARDIOVASCULAR (2 points): Heart sounds: S1, S2 Cardiac rhythm (if applicable): regular Peripheral Pulses: <ul style="list-style-type: none"> • Radial: 3+ bilaterally • Pedal: 2+ bilaterally Capillary refill: <3 seconds. Neck Vein Distention: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Edema Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Location of Edema: N/A</p>	<p>Auscultated S1 and S2 heard sounds. Apical pulse is 84 bpm and regular. Radial pulses are 3+ bilaterally, pedal pulses 2+ bilaterally. Capillary refill is <3 seconds, assessed on right index finger. No JVD or edema is noted. Client denies any chest pain or palpitations. Skin is warm to the touch at all extremities.</p>
<p>RESPIRATORY (2 points): Accessory muscle use: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Breath Sounds: Clear throughout all lobes, posteriorly and anteriorly.</p>	<p>Respirations are non-labored and regular in rhythm with no use of accessory muscles noted. CM’s respiratory rate is 22 respirations per minute. The client denies any dyspnea, cough, SOB, or other respiratory complaint. Lung sounds are clear throughout all lobes posteriorly and anteriorly.</p>
<p>GASTROINTESTINAL (2 points): Diet at home: Regular Current diet: Regular Height (in cm): 149.5 cm Auscultation Bowel sounds: Active in all four quadrants. Last BM: 1/28/20. Palpation: Non-tender to palpation. No masses noted.</p>	<p>CM is on a regular diet at home and as an inpatient. His appetite is good. His parents advise that the client consumed “most of” his lunch, he consumes 100% his afternoon snack, and reports feeling hungry at dinner time. His abdomen is soft, non-distended, and non-tender to palpation. No masses are noted. Bowel sounds are active x4. CM does not have an ostomy, nasogastric tube, or feeding tube.</p>

<p>Inspection: Distention: Non-distended. Incisions: n/a Scars: n/a Drains: n/a Wounds: n/a Ostomy: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Nasogastric: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Size: n/a Feeding tubes/PEG tube Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Type: n/a</p>	
<p>GENITOURINARY (2 Points): Color: Yellow Character: Clear, without foul odor. Quantity of urine: 325 mL Pain with urination: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Dialysis: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Inspection of genitals: Catheter: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Type: n/a Size: n/a</p>	<p>The client denies dysuria. CM’s bladder is non-distended and non-tender. This student measures 325 mL of output with one void, but client has an additional unmeasured void this shift. Urine is yellow in color and clear with no foul odor. The client is not on dialysis and does not have a urinary catheter.</p>
<p>MUSCULOSKELETAL (2 points): Neurovascular status: ROM: Supportive devices: n/a Strength: ADL Assistance: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Fall Risk: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Fall Score (Cummings): 10 Activity/Mobility Status: Independent (up ad lib) <input checked="" type="checkbox"/> Needs assistance with equipment <input type="checkbox"/> Needs support to stand and walk <input type="checkbox"/></p>	<p>CM demonstrates a functional AROM in all extremities and is capable of independently changing positions in bed, getting out of bed, and ambulating without physical support.</p> <p>The client demonstrates 5/5 muscular strength in all extremities. His fall score using the Cumming’s Pediatric Scale is 10, which corresponds to a high risk level.</p> <p>The client is physically capable of independent ambulation. However, because of his seizure precautions he is supervised while doing so and is considered a fall risk.</p>
<p>NEUROLOGICAL (2 points): MAEW: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> PERLA: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Strength Equal: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> if no - Legs <input type="checkbox"/> Arms <input type="checkbox"/> Both <input type="checkbox"/> Orientation: x4 Mental Status: Mental development is appropriate for his age. Speech: Clear Sensory: Sensorium is intact.</p>	<p>CM moves all extremities. PERRLA. He demonstrates equal and appropriate strength in all extremities. The client exhibits behavior and language that is appropriate for his age. He speaks in clear and syntactically correct English. The sensorium is intact; CM does not report nor exhibit any apparent deficit in vision, hearing, taste, smell, or tactile perception. At this time, the client states he feels a bit tired. However, he is alert, responsive, and cooperative during this</p>

<p>LOC: Reports feeling tired, but easily remains alert and focused during assessment.</p>	<p>assessment.</p>
<p>PSYCHOSOCIAL/CULTURAL (2 points): Instructed that it is okay to do the psychosocial assessment for the client rather than caregivers. Coping method(s) of client: Talking with friends and parents, playing video games as a diversion. Social needs (transportation, food, medication assistance, home equipment/care): Needs are met by parents. Personal/Family Data (Think about home environment, family structure, and available family support): The client lives with his mother, father, and older brother. His parents are involved and supportive.</p>	<p>CM identifies talking with his friends and parents as methods he uses to cope with stress, which he believes is effective. He additionally cites playing video games as an effective diversional activity.</p> <p>The client’s needs are addressed by his parents, who can adequately provide transportation to and from appointments and obtain food, medication, or any equipment he may require.</p> <p>CM lives with his mother, father, and older brother. The family environment appears to be loving and supportive. Both of CM’s parents are at his bedside for the duration of the shift. CM reports having a good relationship with his older brother, who is not present currently.</p>

Vital Signs, 1 set (2.5 points)

Time	Pulse	B/P	Resp Rate	Temp	Oxygen
1650	84 bpm	97/66 mmHg	22 respirations/minute	36.3 (C)	99% on room air

Normal Vital Sign Ranges (2.5 points)
****Need to be specific to the age of the child****

<p>Pulse Rate</p>	<p>50-90 bpm (Holman et al., 2019).</p>
<p>Blood Pressure</p>	<p>Systolic: 97-130 mmHg Diastolic: 58-90 mmHg (Holman et al., 2019).</p>
<p>Respiratory Rate</p>	<p>14-26 respirations per minute (Ricci et al., 2017).</p>

Temperature	The average temperature is 36.7 degrees Celsius (Holman et al., 2019).
Oxygen Saturation	At sea level, a pulse oximetry reading of 95-100% is considered normal (Andrade et al., 2020).

Normal Vital Sign Range Reference (1) (APA):

Andrade, V., Andrade, F., Riofrio, P., Nedel, F. B., Martin, M., & Romero-Sandoval, N. (2020).

Pulse oximetry curves in healthy children living at moderate altitude: A cross-sectional study from the Ecuadorian Andes. *BMC Pediatrics*, 20, 440.

<https://doi.org/10.1186/s12887-020-02334-z>

Holman, H.C., Williams, D., Sommer, S., Johnson, J., Wheless, L., Wilford, K., & McMichael, M. G. (2019). *RN nursing care of children review module* (11th ed.). Assessment Technologies Institute, LLC.

Ricci, S. S., Carman, S., & Kyle, T. (2017). *Maternity and pediatric nursing* (3rd ed.). Wolters Kluwer.

Pain Assessment, 2 sets (2 points)

Time	Scale	Location	Severity	Characteristics	Interventions
1530	numeric	n/a	0/10	n/a	Assess for pain each time the nurse enters the patient room and as needed.
Evaluation of pain status <u>after</u>	numeric	n/a	0/10	n/a	Assess for pain each time the nurse enters the

intervention					patient room and as needed.
1700					
<p>Precipitating factors: The client did not report pain this shift. No precipitating factors are observed or reported.</p> <p>Physiological/behavioral signs: CM did not report any pain this shift. No physiological or behavioral signs of pain are observed. The client appears calm and relaxed.</p>					

Intake and Output (1 points)

Intake (in mL)	Output (in mL)
775 mL of water taken PO.	825 mL urine
100 mL IV fluid.	1 void, unmeasured
Total: 875 mL	Total: 825 mL + 1 void

Developmental Assessment (6 points)

Be sure to highlight the achievements of any milestone if noted in your child. Be sure to highlight any use of diversional activity if utilized during clinical. There should be a minimum of 3 descriptors under each heading

Age Appropriate Growth & Development Milestones

1. A child between 10 and 12 years of age should be able to physically manipulate objects with skill comparable to an adult (Ricci et al., 2017).
2. During the school-aged years, children begin getting their permanent teeth (Holman et al., 2019).
3. Children between 6 to 12 years old are expected to gain approximately 2-3 kg/year (Holman et al., 2019).

Age Appropriate Diversional Activities

1. Participation in organized competitive sports (Holman et al., 2019)
2. Play board and card games (Holman et al., 2019)
3. Solving jigsaw puzzles (Holman et al., 2019)

Psychosocial Development:

Which of Erikson's stages does this child fit? CM is a school-aged child that is in Erikson's Industry vs. Inferiority stage (Ricci et al., 2017).

What behaviors would you expect?

During this stage of development, children develop a concept of self-worth and attempt to establish it by developing new skills and striving for achievement in novel domains (Ricci et al., 2017). Essentially, a child in the industry vs inferiority stage is attempting to build self-esteem through mastery. Thus, school aged children typically try out new activities, exhibit greater interest in social interaction and learning, and become curious about how objects work (Ricci et al., 2017).

What did you observe?

CM demonstrates curiosity in how his ECG equipment, pulse oximetry probe, and monitor work. He confidently attempts to assist with troubleshooting when the pulse oximetry probe fails to read. In fact, he correctly surmises that the probe is either incorrectly attached to or disconnected from the monitor without seeing it. Furthermore, CM discusses the value he places on his interactions with friends.

Cognitive Development:

Which stage does this child fit, using Piaget as a reference? CM is a school-aged child and fits in Piaget's concrete operational stage (Holman et al., 2019; Ricci et al., 2017).

What behaviors would you expect?

Children in the concrete operational stage learn to tell time, demonstrate increased ability to classify complex information, can understand other peoples' point of view, transition to

conceptual thinking from perceptual thought, exhibit problem solving, and gradually master the concept of conservation of mass, weight, and volume (Holman et al., 2019).

What did you observe?

CM can tell time by reading a clock. He demonstrates problem-solving skills by attempting to troubleshoot his pulse oximeter's failure to read. The client also exhibits conceptual understanding of conservation of volume by correlating that increasing his fluid intake also increases his urine output.

Vocalization/Vocabulary:

Development expected for child's age and any concerns?

CM demonstrates language skills that are consistent with expectations for his age. He speaks in clear and syntactically correct English. This student observes that CM makes correct usage of plurals and pronouns, which is an appropriate finding for his age (Ricci et al., 2017). No observations are made that support cause for concern about CM's vocabulary, speech, or language use.

Any concerns regarding growth and development?

This student does not make any observations that raise his suspicion for developmental problems in CM.

Developmental Assessment Reference (1) (APA):

Holman, H.C., Williams, D., Sommer, S., Johnson, J., Wheless, L., Wilford, K., & McMichael, M. G. (2019). *RN nursing care of children review module* (11th ed.). Assessment Technologies Institute, LLC.

Ricci, S. S., Carman, S., & Kyle, T. (2017). *Maternity and pediatric nursing* (3rd ed.). Wolters Kluwer.

Nursing Diagnosis (15 points)

Must be NANDA approved nursing diagnosis and listed in order of priority

<p>Nursing Diagnosis</p> <ul style="list-style-type: none"> • Include full nursing diagnosis with “related to” and “as evidenced by” components 	<p>Rational</p> <ul style="list-style-type: none"> • Explain why the nursing diagnosis was chosen 	<p>Intervention (2 per dx)</p>	<p>Evaluation</p> <ul style="list-style-type: none"> • How did the patient/family respond to the nurse’s actions? • Client response, status of goals and outcomes, modifications to plan.
<p>1. Risk for decreased cardiac output related to altered electrical activity secondary to electrolyte imbalance as evidenced by serum calcium level of 5.4 mg/dL.</p>	<p>A possible complication of hypocalcemia is Torsades de Pointes (Holman et al., 2019). Torsades de Pointes can rapidly progress to ventricular fibrillation or</p>	<p>1.The nurse will monitor the client’s ECG for a prolonged QT interval or other changes.</p> <p>2. The nurse will administer calcium gluconate 1g PO q6h as</p>	<p>CM is taking his medications as prescribed and has not experienced any adverse reactions. His parents understand why he is taking calcium and have no objections to the treatment. CM tolerates ECG monitoring well and</p>

	<p>sudden cardiac death (Cohagan & Brandis, 2020).</p> <p>This nursing diagnosis was prioritized first because it represents the most emergent potential problem.</p>	<p>ordered.</p>	<p>leaves his leads in place except when showering. Telemetry monitoring this shift reveals normal sinus rhythm with no PVCs.</p> <p>The goal for this nursing diagnosis is for the client to remain free from arrhythmias during his stay at Carle Foundation Hospital. This goal is in progress. While no ECG changes are noted this shift, the client remains an inpatient.</p>
<p>2. Risk for falls related to seizure activity as evidenced by patient history of seizure.</p>	<p>Falls can cause serious complications including soft-tissue injury, head injury, and fractures (Gulanick & Myers, 2017).</p>	<p>1. The nurse will verify that the client’s bed is in the low position, that the side-rails are up, and that the wheels on the bed are locked each time they enter the room.</p> <p>2. The nurse or caregiver will supervise the client when he ambulates to the bathroom.</p>	<p>The client and his family tolerated the interventions well. The client’s family participates in his care and supervises him when ambulating to the bathroom.</p> <p>The goal associated with nursing diagnosis and intervention is for the client to remain free from falls for the duration of his stay at Carle. This goal remains in progress. While the client has not had any falls as an inpatient, he is still at the hospital and does not have a planned discharge date.</p>
<p>3. Deficient knowledge related to seizure activity as evidenced by parents’ statements</p>	<p>Understanding how to recognize seizure activity and its phases, as well as how to</p>	<p>1. The nurse will assess CM’s parents’ current knowledge about seizures and their</p>	<p>This set of interventions is focused on educating the client’s parents on how to respond if they</p>

<p>to the nurse indicating that they suspect previous seizure activity.</p>	<p>respond to seizures, may help the patient and family plan care that prevents injury (Gulanick & Myers, 2017).</p> <p>This diagnosis was ranked third because while important, it represents a less immediate need than preventing a lethal arrhythmia or falls while CM is an inpatient at Carle.</p>	<p>management.</p> <p>2. The nurse will explain to CM's parents how to protect CM from injury during a seizure.</p>	<p>observe CM having seizure activity. Ideally, they will verbalize an understanding that they should take measures such as lowering him to the floor, moving potentially hazardous objects, loosening his clothing, and turning his head to the side.</p> <p>The goal for this diagnosis is for CM's parents to teach back to the nurse what they will do if CM has a seizure by the end of the shift.</p> <p>The goal remains in progress, as this student has not yet provided the teaching to CM's parents.</p>
<p>4. Interrupted family processes related to a change in health status of a family member as evidenced by client's diagnosis of hypoparathyroidism.</p>	<p>The new illness of a family member requires members of the family unit to adapt in order to accommodate the needs of the ill person (Gulanick & Myers, 2017). CM's condition may require his parents or sibling to miss work or other obligations and take responsibility for elements of his care.</p> <p>This diagnosis</p>	<p>1. Assess the strengths, weaknesses, concerns, and coping skills of CM's family members.</p> <p>2. If appropriate, the nurse will assist CM's parents in obtaining a consult with a social worker or family therapist.</p>	<p>This set of outcomes focuses on determining if CM's family unit is prepared to adapt to his illness and helping them to obtain appropriate interdisciplinary help if needed. Ideally, CM's family will communicate honestly with the nurse about their strengths, weaknesses, concerns, and coping skills. In the event that the nurse feels a consult with social services or a family therapist would benefit them, CM's family would ideally express interest in</p>

	<p>was ranked last because, while important, it does not represent an immediate threat to CM's homeostasis.</p>		<p>doing so.</p> <p>The goal for this nursing diagnosis is for CM's immediate family members to each identify one strength, weakness, concern, and coping skill they have prior to his discharge.</p> <p>This goal is not yet complete. At this time, the student has not assessed CM's family and does not determined if a referral to a social worker or</p>
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Other References (APA):

Cohagan, B, & Brandis, D. (2020). *Torsade de pointes*. National Center for Biotechnology Information. <https://www.ncbi.nlm.nih.gov/books/NBK459388/>

Gulanick, M., & Myers, J. L. (2017). *Nursing care plans: Diagnoses, interventions, and outcomes* (9th ed.). Elsevier.

Hinkle, J. L., & Cheever, K.H. (2018). *Brunner & Suddarth's textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer.

Holman, H.C., Williams, D., Sommer, S., Johnson, J., Ball, B. S., Wheless, L., Leehy, P., & Lemon, T. (2019). *RN adult medical surgical nursing review module* (11th ed.). Assessment Technologies Institute, LLC.

Concept Map (20 Points):

Subjective Data

CM complains of fatigue.
States "the first thing I can remember is being in the ambulance."
His parents believe that CM may have had previous seizures based on their retrospective observations.

Objective Data

CM had a generalized seizure lasting approximately 1 minute with a postictal period of approximately 25 minutes.
CM's pertinent lab results include calcium = 5.4 mg/dL, phosphate 10 mg/dL, monocytes = $0.9 \times 10^3/\mu\text{L}$, 25-hydroxy vitamin D = 29.3 ng/mL, and PTH = 3 pg/mL
CM's brain CT reveals areas of possible calcification in his subcortical white matter.
Dx: Hypoparathyroidism
Orders include calcium gluconate 1 g IV q6h, calcium carbonate 2500 mg PO BID, calcitriol 0.5 mcg PO q8h, lorazepam 2.736 mg IV PRN for seizures >3 minutes, ISTAT chemistry draws q6h, vitals q8h, and neuro checks q8h.
Patient's parents are at bedside.
Cummings fall score is 10
VS: BP 97/66 mmHg, P 84 bpm, R 22/min, T 36.3 C, O₂ 99%/RA.
CM is on continuous cardiac monitoring. NSR this shift with a rate of 84 bpm and no PVCs.

Patient Information

CM is an 11 year old male that reported to the emergency department 1/28/21 following a generalized seizure lasting approximately 1 minute with a postictal period of 25 minutes. He was admitted with diagnoses of hypoparathyroidism and hypocalcemia. He has no significant medical history or hospitalizations prior to this. He has a surgical history of circumcision. CM's parents are present at bedside. The etiology of his hypothyroidism is not yet known. He is a fall risk. V/S: BP 97/66 mmHg, P 84 bpm, R 22/min, T 36.3 C, O₂ 99%/RA. CM's pertinent lab results include calcium = 5.4 mg/dL, phosphate 10 mg/dL, monocytes = $0.9 \times 10^3/\mu\text{L}$, 25-hydroxy vitamin D = 29.3 ng/mL, and PTH = 3 pg/mL. CT reveals possible calcification of subcortical white matter. Current medication orders are calcium gluconate 1 g IV q6h, calcitriol 0.5 mcg PO q8h, calcium carbonate 1g IV q6h, and lorazepam 2.736 mg IV PRN for seizures >3 minutes. His vitals are taken q8h, neuro checks are q8h, ISTAT chemistry panels are drawn q6h. His calcium on his ISTAT draws has been trending up. He is on continuous cardiac monitoring. ECG this shift has been uneventful - NSR with a rate of 84 BPM and no PVCs. Attending physician anticipates an MRI, but has not determined whether it will be done on an inpatient or outpatient basis. No discharge date is planned as of yet.

Nursing Diagnosis/Outcomes

Diagnosis 1: Risk for decreased cardiac output related to altered electrical activity secondary to electrolyte imbalance as evidenced by serum calcium level of 5.4 mg/dL.

Outcome 1: The client will remain free from arrhythmias during his stay at Carle Foundation Hospital.

Diagnosis 2: Risk for falls related to seizure activity as evidenced by patient history of seizure.

Outcome 2: The client will remain free from falls for the duration of his stay at Carle Foundation Hospital.

Diagnosis 3: Deficient knowledge related to seizure activity as evidenced by parents' statements to the nurse indicating that they suspect previous seizure activity.

Outcome 3: The client's parents will teach back to the nurse what they will do if CM has a seizure by the end of the shift.

Diagnosis 4: Interrupted family processes related to a change in health status of a family member as evidenced by client's diagnosis of hypoparathyroidism.

Outcome 4: CM's immediate family members will each identify one strength, weakness, concern, and coping skill they have prior to his discharge.

Nursing Interventions

Diagnosis 1 Interventions

The nurse will monitor the client's ECG for a prolonged QT interval or other changes.
The nurse will administer calcium gluconate 1g PO q6h as ordered.

Diagnosis 2 Interventions

The nurse will verify that the client's bed is in the low position, that the side-rails are up, and that the wheels on the bed are locked each time they enter the room.
The nurse or caregiver will supervise the client when he ambulates to the bathroom.

Diagnosis 3 Interventions

The nurse will verify that the client's bed is in the low position, that the side-rails are up, and that the wheels on the bed are locked each time they enter the room.
The nurse or caregiver will supervise the client when he ambulates to the bathroom.

Diagnosis 4 Interventions

The nurse will assess CM's parents' current knowledge about seizures and their management.
The nurse will explain to CM's parents how to protect CM from injury during a seizure.