Medications

Medications	Insulin glargine (Lantus) SC Bolus injection	Insulin lispro (Humalog) SC 1 unit for every 15 mg/dL over 120 mg/dL glucose SC correction 1-20 units
Pharmacological & Therapeutic Class	P: Insulin (UpToDate, 2023) T: Long acting Insulin (UpToDate, 2023)	P: Insulin (UpToDate, 2023) T: Fast acting Insulin (UpToDate, 2023)
Reason for Taking Med	T2DM - manage blood sugar levels (UpToDate, 2023)	T2DM - manage blood sugar levels (UpToDate, 2023)
Key Nursing Assessments	Assess blood glucose level - how much to give if hyperglycemic, do not give if NPO, or hypoglycemic - Watch for hypoglycemia after administration/during peak time of insulin	Assess blood glucose level - how much to give if hyperglycemic, do not give if NPO, or hypoglycemic - Watch for hypoglycemia after administration/during peak time of insulin

Demographic Data

Admitting Diagnosis: Diabetic Ketoacidosis without coma associated with Type 2 Diabetes Mellitus

Age of Client: 16 years old

Sex: Male

Weight in kgs: 113 kg

Allergies: No Known Allergies

Date of admission: 06/12/2023

Psychosocial Developmental Stage: Identity vs. Role Confusion

Cognitive Development Stage: Formal Operational Stage

Admission History

The client seeked medical care due to elevated blood glucose levels and associated nausea and vomiting. The client was displaying signs of severe hyperglycemia upon arrival. The underlying cause of the symptoms (T2DM) was not being managed correctly, which led to the symptoms and the client seeking medical care.

Pathophysiology

Disease Process: Diabetic ketoacidosis (DKA) results from the mismanagement of diabetes. First, hyperglycemia occurs from the lack of insulin within the body or the lack of administering insulin to the individual. Next, the body begins to break down fats for energy, and the byproduct is ketones. Ketones build up excessively in the body due to the lack of insulin, which places the body into diabetic ketoacidosis (Mayo Clinic Staff, 2022).

S/S of Disease: Signs and Symptoms of DKA include: polyuria, polyphagia, polydipsia, nausea, vomiting, weakness, and fatigue (Mayo Clinic Staff, 2022). The client presented with nausea and vomiting.

Method of Diagnosis: DKA is diagnosed through blood tests, urinalysis, and arterial blood gases (ABGs) (Mayo Clinic Staff, 2022). The best indicator of DKA is Beta-hydroxybutyrate from the blood draw. Ketones are excreted in the urine, so it is important to do a urinalysis. Also, the ABGs indicate that the body is in an acidic state. The client had a CBC, urinalysis, and ABG blood draw done to confirm the diagnosis of DKA.

Treatment of Disease: Diabetic ketoacidosis can be treated with fluids, electrolyte replacement, and insulin therapy (Mayo Clinic Staff, 2022). Fluids and electrolyte replacement replenish the body to a homeostatic state. Insulin therapy helps to regulate blood sugars and prevent the individual from experiencing another severe hyperglycemic episode. The client was treated

Relevant Lab Values/Diagnostics

Lab	(Normal range)	PT reading
Urine drip glucose	(Normal mg/dL)	250↑
Urine drip ketone	(Negative)	+small↑
I-stat glucose	(60-99 mg/dL)	336↑
I-stat TCO2	(22-29 mmol/L)	<10↓
Glyco HB A1c(4.0%-7.0%)	>14.0%↑	
Beta-Hydroxybutyrate	(0.0-0.3 mmol/L)	8.2↑
pH	(7.310-7.410)	7.233↓
pCO2	(41.0-51.0 mmHg)	40.7↓
pO2	(35.0-45.0 mmHg)	30.4↓
HCO3	(21.5-25.5 mmol/L)	16.8↓
POC Glucose (6/14)	(60-99 mg/dL)	197↑

Normal ranges for the labs are normal values per Carle's EPIC charting system
The abnormal labs above indicated hyperglycemia and diabetic ketoacidosis (Pagana et al., 2020). The abnormalities of these lab values showed that at the time of obtaining these values, the client was in a highly hyperglycemic state (diabetic ketoacidosis) and had poorly managed their blood sugars leading up to this point.
No imaging was done on the client.

Medical History

Previous Medical History: Type 2 Diabetes Mellitus, Obesity

Prior Hospitalizations: 03/22/23: Covid-19; 09/02/23: Inattention, Adjustment disorder; 06/07/22: DKA w/o coma associated w/ T2DM; 04/18/22: Hyperglycemia & Acute Kidney Injury; 07/12/21: T2DM w/ Hyperglycemia; 05/16/21: DKA in pediatric patient; 02/25/21: Diabetic ketosis; 01/30/21: DKA in pediatric patient; 10/03/20: New onset DM in pediatric patient

Chronic Medical Issues: Type 2 Diabetes Mellitus, Obesity

Social needs: Inability to access meds; poor guidance by family (school nurse handles insulin); Single parent household (mother); Need education on importance of glycemic control (A1c > 14% on 6/12/23)

Active Orders

1) Admission Education

2) Obstructive Sleep Apnea Risk or actual education

3) Spiritual Distress Risk or actual education

4) Comorbidity Education (pediatric)

5) Diabetic Ketoacidosis Education (Pediatric)

6) Hyperglycemia Education (Pediatric)

7) Urinary Retention Education (Pediatric)

8) Maintain Peripheral IVs (for emergency)

9) Blood glucose ACHS (T2DM - glycemic control)

The client must understand that their DM diagnosis puts them at risk for several other complications, so that is why these topics are being taught.

Assessment	
General	The client is alert and oriented to person, place, time, and situation. They appear well-groomed and in no acute distress.
Integument	The client's skin is normal for ethnicity, warm and dry to the touch. No cuts, bruises, or lesions were noted upon inspection.
HEENT	The head and neck are symmetrical; the trachea is midline. Bilateral ears have no visible lumps, lesions, or deformities. The septum is midline. The mouth is pink and moist with good dentition.
Cardiovascular	Heart sounds are clear upon auscultation, with S1 and S2 present. Normal rate and rhythm. Bilateral carotid, brachial, radial, and posterior tibial pulses are 2+. Capillary refill in the fingers and toes are less than 3 seconds.
Respiratory	Bilateral lung sounds are clear upon auscultation anteriorly and posteriorly. No abnormal or adventitious lung sounds are noted. Respirations are of normal rate and rhythm.
Genitourinary	The client denied issues with urination. The client frequently holds/ignores the urge to urinate (has been educated on this). Ketones and glucose have been in the urine since admission to the floor.
Gastrointestinal	The client is on a carbohydrate-controlled diet. Bowel sounds are normoactive. Upon inspection, no lesions, bumps, or bruises are noted on the abdomen.
Musculoskeletal	The client's strength is normal and equal bilaterally in their arms and legs. Hand grips, pushes and pulls, and pedal pushes and pulls are of normal and equal strength. The client has an active range of motion.
Neurological	PERRLA was observed in both eyes. The client is A&O x 4. The client could stick out their tongue, move it side-to-side, and smile. The client did not have any issues with balance or walking.
Most recent VS (highlight if abnormal)	**Time:** 0900 **Temperature:** 98.1 F **Route:** Oral **RR:** 16 **HR:** 90 **BP and MAP:** 108/56 **Oxygen saturation:** 97% on room air **Oxygen needs:** None
Pain and Pain Scale Used	Numerical pain scale: 0 / 10

Nursing Diagnosis 1	Nursing Diagnosis 2	Nursing Diagnosis 3
Deficient knowledge related to glycemic control as evidenced by several hospitalizations from diabetic ketoacidosis and hyperglycemia (Phelps, 2017).	Obesity related to rapid weight gain during childhood as evidenced by a BMI > 30 kg/m^2 (BMI is 36.8 kg/m^2) (Phelps, 2017).	Ineffective health management related to insufficient knowledge of therapeutic regimens as evidenced by several hospitalizations for diabetic ketoacidosis and hyperglycemia (Phelps, 2017).
Rationale	**Rationale**	**Rationale**
The client has been admitted to the hospital several times for illnesses related to T2DM, specifically not managing their diabetes.	The client's BMI is significantly above the indication of obesity.	The client has been admitted several times for DKA and hyperglycemia, which shows that they are not managing their disease well or are unaware of how to manage it.
Interventions	**Interventions**	**Interventions**
Intervention 1: Determine the level of knowledge and skills the client possesses (Phelps, 2017). **Intervention 2:** Teach new knowledge and skills and have the client incorporate the new knowledge and skills into their plan of care while still in the hospital (Phelps, 2017).	**Intervention 1:** Teach the client about low-calorie, nutritious foods (Phelps, 2017). **Intervention 2:** Work with the client to set weekly meal plans that are low-calorie and nutritious (Phelps, 2017).	**Intervention 1:** Teach the client about their disease states and regimens, and teach problem-solving skills to actively participate in self-health management (Phelps, 2017). **Intervention 2:** Assist the client in setting goals and making informed choices regarding their health management (Phelps, 2017).
Evaluation of Interventions	**Evaluation of Interventions**	**Evaluation of Interventions**
The nurse will identify the client's knowledge deficits, then educate the client in those areas and assist with having them partake in skills and management of their illness while still in the hospital. Before discharge, the client will demonstrate the skills and knowledge needed to effectively manage their disease.	The client will identify low-calorie and nutritious foods on the hospital menu, order said items, and create weekly meal plans that are low-calorie and nutritious to assist in weight loss.	The client will identify their disease and risks that can cause complications related to their disease and demonstrate ways to manage their disease through motor skills and thought processes.

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