

## Case Study 1: Patient N.B.

### Diabetic Ketoacidosis

#### Patient Profile

N.B., a 34-year-old Native American man, was admitted to the emergency department after he was found unconscious by his wife in their home.

#### **Subjective Data (Provided by Wife)**

- Was diagnosed with type 1 diabetes mellitus 12 mo. ago
- Was taking 50 U/day of insulin: 5 U of lispro insulin with breakfast, 5 U with lunch, and 10 U with dinner Plus 30 U of glargine insulin at bedtime
- States a history of gastroenteritis for 1 wk with vomiting and anorexia
- Stopped taking insulin 2 days ago when he was unable to eat

#### **Objective Data**

##### Physical Examination

- Breathing deep and rapid
- Fruity acetone smell on breath
- Skin flushed and dry

##### Diagnostic Studies

- Blood glucose level 730 mg/dL (40.5 mmol/L)
- Blood pH 7.26

#### **Discussion Questions**

##### **1. Briefly explain the pathophysiology of the development of diabetic ketoacidosis (DKA) in this patient.**

DKA is caused by a profound deficiency of insulin. This is characterized by: Hyperglycemia, Ketosis, Acidosis, Severe Dehydration. Seen in T1DM but can be seen in T2DM conditions of severe illness or stress when the pancreas cannot meet the extra demand for insulin.

##### **2. What clinical manifestations of DKA does this patient exhibit?**

Breathing deep and rapid (Kussmaul Respiration's), fruity acetone smell of breath. Also the skin is flush and dry.

##### **3. What factors precipitated this patient's DKA?**

Factors that precipitated in this patient was infection and illness whether it is viral or bacterial, along with inadequate insulin dosage, poor-self management

##### **4. Priority Decision: What is the priority nursing intervention for N.B.?**

Number one thing to treat as soon as possible in patients experiencing Diabetic Ketoacidosis, is to give them a bolus of saline.

##### **5. What distinguishes this case history from one of hyperosmolar hyperglycemic syndrome (HHS) or Hypoglycemia?**

What distinguishes this case from Hyperosmolar Hyperglycemic Syndrome or Hypoglycemia is that HHS is mainly seen in patients diagnosed with diabetes type 2. Where as DKA can be present mainly in type one diabetes but in some cases is seen in type two as well. But the fruity breathe and ketones present, is hallmark for DKA.

##### **6. Priority Decision: What is the priority teaching that should be done with this patient and his family?**

Priority teaching would be to maintain a balance diet whether that is to count carbs and keep a log of blood glucose readings. But to for sure know when to check blood glucose levels and how much insulin to give with the result given. Also the importance to be consistent in taking anti-diabetic medication and to know the

importance of “sick day rules”. Also to teach the signs and symptoms to look for in not only hyperglycemia but also in hypoglycemia because it can go either way if medication is not given as directed.

**7. What role should N.B.'s wife have in the management of his diabetes?**

The role the patient's wife should play in management in his diabetes is a role of support. Help him maintain a routine of checking his blood glucose levels prior to administering insulin but her role should not take over his plan of care and making decisions for him. Only he knows how he feels and helping him stay on track is her role and maybe she should get more educated on when to give insulin and blood glucose monitoring that way if he has any questions she can possibly help him. Or she can call and ask the provider to clarify anything they are unclear on treatment wise.

**8. Priority Decision: Based on the assessment data presented, what are the priority nursing diagnoses?**

**Are there any collaborative problems?**

Imbalanced Nutrition: Less Than Body Requirements is a priority nursing diagnosis that needs to be resolved as soon as possible. Especially the hydration being the number one factor that needs to be addressed by giving intravenous fluids immediately. The patient a week ago States a history of gastroenteritis for 1 wk with vomiting and anorexia. This does not add to his symptoms of diabetic Ketoacidosis. It only makes him feel even worse contributing to not wanting to take medication as prescribed and not able to stay hydrated as needed to help bring the blood sugar levels down and also not able to hold anything nutritious down as being nauseous and vomiting.

**9. Evidence-Based Practice: N.B.'s wife asks you if she should have given her husband insulin when he got**

**sick? How would you respond?**

I would have advised the patient's wife to continue taking anti-diabetic medications if normal diet is not possible, supplement with carbohydrate containing fluids while continuing medications. Despite feeling ill, it is important to maintain hydration and to continue taking medication as directed.