

### Scenario: Type I DM

You work in the diabetes (DM) center at a large teaching hospital where you meet K.W. She is a 20-year-old Hispanic woman who was released from the hospital 2 days ago after being diagnosed with type 1 DM. Nine days ago, K.W. went to see the provider after a 1-month history of frequent urination, thirst, severe fatigue, blurred vision, and some burning and tingling in her feet. She attributed those symptoms to working long hours at the computer. Her random glucose level was 410 mg/dL (22.8 mmol/L). The next day her laboratory values were as follows: fasting glucose 335 mg/dL (18.6 mmol/L), A1C 8.8%, cholesterol 310 mg/dL (8.03 mmol/L), triglycerides 300 mg/dL (3.39 mmol/L), HDL 25 mg/dL (0.65 mmol/L), LDL 160 mg/dL (4.14 mmol/L), ratio 12.4, and creatinine 0.9 mg/dL (80.0 μmol/L). Her body mass index was 29.6 with a BP 160/96 mm Hg. She was admitted to the hospital for control of her glucose levels and the initiation of insulin therapy with carbohydrate (CHO) counting. After discharge, K.W. has been referred to you for diabetes education. You are to cover 4 areas: pharmacotherapy, glucose monitoring, basic nutrition therapy, and exercise.

1. What is the overall teaching goal with a patient newly diagnosed with type 1 DM?

The overall goal for type 1 DM is to provide K.W. with the necessary skills to manage her DM effectively. For her to do so it includes education on insulin and how to self-administer, along with monitoring blood glucose levels, and lifestyle changes.

2. What assessments do you need to make before starting your session?

Check current level of knowledge on type 1 DM, signs and symptoms of hypoglycemia/ hyperglycemia, and current lifestyle conditions

3. K.W. was started on sliding scale lispro (Humalog) four times daily and glargine (Lantus) insulin at bedtime. What are the significant differences between the 2 therapies?

Humalog is a rapid acting insulin, it works within 15 minutes and peaks in 30-90 minutes which last 3-5 hr.

Lantus is a long-acting insulin given once daily for glucose control, there is no peak and last 24 hr.

4. Outline important content to include about insulin therapy.

Different types of insulin and their onset, peak, and duration

Proper administration techniques

Proper storage and s/sx of hypo-hyperglycemia, timing of insulin with meals

5. What specific points would you include about managing insulin therapy? **Select 5 options.**

- a. Store unopened insulin in the freezer.
- b. The insulin can be used if it is yellow but not expired.
- c. The fastest subcutaneous absorption is from the abdomen
- d. Administer the lispro (Humalog) within 15 minutes of eating.
- e. Ideally, the glargine (Lantus) should be administered at bedtime.
- f. A prefilled syringe can be stored for 24 hours at room temperature.
- g. Always administer the injections in the same, easy-to-reach location.
- h. The current vial of lispro (Humalog) can be kept at room temperature for 1 month.
- i. Two injections will be needed to administer lispro (Humalog) and glargine (Lantus).

6. What is the best way to determine whether K.W. can safely self-administer insulin?

- a. Having her describe the process step-by-step
- b. Evaluating her A1C levels and daily glucose logs
- c. Observing her draw up and administer an insulin dose
- d. Asking her to rate her confidence in her ability to give a self-injection

7. Outline important content to review about glucose monitoring.

How to use a glucose monitor, monitoring glucose levels frequently, understanding how to read and interpret glucose results.

8. K.W. states her diet is mostly fast foods. The foods she cooks at home are high in starch and fat. Her mealtimes often vary from day to day because of her work schedule. What is CHO counting? Why might this method work well for K.W.?

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CHO counting involves tracking the amount of carbs eaten during each meal and adjusting your insulin accordingly. In K.W case they will benefit from this method due to their irregular work schedule.

9. Outline important points to cover about a basic nutrition plan with CHO counting.

Choosing healthier meals over fast food, reading nutritional labels, and educating about the importance of balancing meals i.e.(carbs, fiber, protein).

10. K.W. states that she currently does not exercise at all. What benefits will K.W. receive from taking part in an exercise program?

It will help to manage K.W weight and can also reduce BP and cholesterol.

11. What do you need to teach K.W. about safe exercise?

You should monitor your glucose before and after exercise, along with carrying a snack/ drink that will increase sugar levels incase experiencing hypoglycemia. Avoid working out if your blood sugar is too high or too low.

12. Describe 3 suggestion you can make to help her deal with her condition and follow the treatment plan.

Lifestyle changes such as working out and eating healthier will be beneficial. A daily routine with set timeframes for checking your glucose levels, eating, and administering can also be implanted. Joining a support group and connecting with others may allow for a smoother transition to K.W new normal.

13. What outcomes could you use to determine if your teaching with K.W. was effective?

K.W demonstrating how to self-administer insulin, K.W is able to keep blood glucose stable and w/ limited fluctuations.

### **CASE STUDY PROGRESS**

K.W. calls the clinic several days later reporting that she has “the flu.” She has been nauseated and vomited once during the night. She has had 2 loose stools. She states that she does have a few chills and may have a low-grade fever but does not have a thermometer. She did not check her glucose level this morning or take her insulin because she has not eaten.

15. Based on these findings, you recognize that K.W. may be experiencing \_\_\_\_\_hyperglycemia\_\_\_\_\_. The priority intervention is to \_\_\_\_\_measure her glucose level\_\_\_\_\_.

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Options for 1	Options for 2
hyperglycemia	administer the normal morning insulin dose
hypoglycemia	ingest a rapid acting carbohydrate
	measure her glucose level

Use an X to indicate whether the instructions below are Indicated (appropriate or necessary) or Contraindicated (could be harmful) for K.W. about managing illness and DM.

Instruction	Indicated	Contraindicated
a. Check glucose level every 2-3 hours throughout the day.	X	
b. Maintain strict NPO status		X
c. Use over-the-counter medications for symptom control.	X	
d. Obtain a yearly influenza vaccine.	X	
e. Take insulin as ordered; call back if there you have concerns so the HCP can adjust insulin doses	X	
f. Someone should be with her in case of an emergency.	X	