

## Case Study 3: Y.L.

### Scenario

Y.L. makes an appointment to come to the clinic where you are employed. She has been complaining of chronic fatigue, increased thirst, constantly being hungry, and frequent urination. She denies any pain, burning, or low back pain on urination. She tells you she has a vaginal yeast infection that she has treated numerous times with OTC (over-the-counter) medication. She admits to starting smoking since going back to work full time as a clerk in a loan company. She also complains of having difficulty reading numbers and reports making frequent mistakes. She says by the time she gets home and makes supper for her family, then puts her child to bed, she is too tired to exercise. She reports feet hurt; they often "burn or feel like there are pins in them." She reports that after her delivery, she went back to her traditional eating pattern which you know is high in carbohydrates.

In reviewing Y.L.'s chart, you notice she has not been seen since the delivery of her child 6 years ago. She has gained a considerable amount of weight; her current weight is 173 lb. Today her BP is 152/97 mm Hg and her plasma glucose is 291 mg/dL. The PCP (primary care provider) orders the following labs: UA, HbA1c (hemoglobin A1c), fasting CMP, CBC, fasting lipid profile, and a baseline 24-hour urine collection to assess Creatinine clearance. The lab values are as follows: fasting glucose 184 mg/dL, A1c 10.4, UA +glucose, - ketones, cholesterol 256 mg/dL, triglycerides 346 mg/dL, LDL (low-density lipids) 155 mg/dL, HDL (high-density lipids) 32 mg/dL, ratio 8.0. Y.L. is diagnosed with type 2 diabetes.

After meeting with Y.L. and discussing management therapies, the PCP decides to start MDI (multiple dose injection) insulin therapy and have the patient count carbohydrates. Y.L. is scheduled for education classes and is to work with the diabetes team to get her blood sugar under control.

**1. Identify the three methods used to diagnose DM.**

- **Three methods for diagnosing DM include; HA1C, oral glucose tolerance test, and fasting plasma glucose.**

**2. Identify three functions of insulin.**

- **Insulin regulates blood glucose levels, it allows glucose to enter cells to be used as energy, and it releases after meals to regulate the rise in glucose.**

**3. Insulin's main action is to lower blood sugar levels. Several hormones produced in the body inhibit the effects of insulin. Identify three.**

- **Some of the counterregulatory hormones include glucagon, epinephrine and growth hormone.**

**4. Y.L. was stated on lispro (Humalog) and glargine (Lantus) insulin with carbohydrate counting. What is the most important point to make when teaching the patient about glargine?**

- **Take glargine (Lantus) at the same time every day, once a day. This is a long acting insulin and it is best to take at bedtime.**

**5. Because Y.L. has been on regular insulin in the past, you want to make sure she understands the difference between regular and lispro. What is the most significant difference between these two insulins?**

- **The biggest difference between regular insulin and lispro is that you must eat within 15 minutes of taking insulin lispro.**

**6. What is the peak time and duration for lispro insulin?**

- **Lispro insulin peaks 30 to 90 min after administration and lasts for about 4.5 hours.**

**7. Y.L. wants to know why she can't take NPH and regular insulin. She is more familiar with them and has taken them in the past. Explain why the provider chose lispro and glargine insulin over NPH and regular insulin?**

- **The provider chose lispro and glargine because lispro is good for the rise in blood glucose after meals and glargine is a long acting insulin taken once daily.**

**NPH is an intermediate duration, and slow acting insulin and regular insulin is short duration, slower acting, so there are no long-term effects and there is not an insulin for the rise in blood glucose immediately after a meal.**