CLASS PREP: Endocrine

Scenario: Type 2 DM

S.S., a 58-year-old Asian woman, comes to the clinic with chronic fatigue, thirst, constant hunger, and frequent urination. She denies any pain, burning, or low-back pain on urination. She tells you she has had frequent vaginal yeast infections that she has treated with over-the-counter medication. She works full time at a bank and states she has difficulty reading numbers and reports, resulting in her making some mistakes. She says, "By the time I get home and make supper, I am too tired to do anything else." She says her feet often "burn or feel like there are pins in them." She has a history of gestational diabetes.In reviewing S.S.'s chart, you note she last saw the provider 6 years ago. Her current weight is 173 lbs (78.5 kg). She is 5'3" (135 cm) tall. Today her BP is 152/97 mm Hg. A random plasma glucose level is 291 mg/dL (16.2 mmol/L). The provider suspects she has developed type 2 diabetes (DM) and orders the laboratory studies shown in the chart.

Laboratory Test Results

Fasting glucose	184 mg/dL (10.2 mmol/L)
Hemoglobin A_{1c} (A_{1C})	8.8%
Total cholesterol	256 mg/dL (6.6 mmol/L)
Triglycer1ides	346 mg/dL (3.91 mmol/L)
Low-density lipoprotein (LDL)	155 mg/dL (4.01 mmol/L)
High-density lipoprotein (HDL)	32 mg/dL (0.83 mmol/L)
Urinalysis (UA)	+ glucose, − ketones

1. Interpret S.S.'s laboratory results.

Fasting glucose: Elevated
Hemoglobin A1C: Elevated
Total cholesterol: Elevated
Triglycerides: Elevated
LDL: Elevated
HDL: Decreased

The following laboratory results are abnormal due to uncontrolled type 2 diabetes. The laboratory results are expected to be out of range due to no treatment being initiated. Once S.S's diabetes is controlled lab results should be WNL.

2. Identify 3 methods we use to diagnose DM.

- Hemoglobin A1C
- Random Blood Sugar vs. Fasting Blood Sugar Test
- Oral Glucose Tolerance Test

3. Name 6 risk factors for type 2 DM. Highlight those that S.S. has.

Age, overweight/obesity, physical inactivity, hypertension, Asian, genetic predisposition, and gestational diabetes.

4. Which of her assessment findings are consistent with type 2 DM?

Fatigue, increased thirst, recurrent infections, vision changes, increased appetite and urination.

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CASE STUDY PROGRESS

S.S. is diagnosed with type 2 DM. The provider starts her on metformin 500 mg orally each day at breakfast and atorvastatin 20 mg orally at bedtime. She is referred to the dietitian for instructions on starting a 1200-calorie diet using an exchange system to promote weight loss and lower glucose, cholesterol, and triglyceride levels. You are to provide teaching about pharmacotherapy and exercise.

5. How can you incorporate S.S.'s cultural preferences as you develop her teaching plan?

Including S.S during the development of her teaching plan allowing S.S to advocate for herself. If S.S has any concerns about her plan of care, she will be able to ask if accommodations are available for cultural preferences.

6. What is the reason for starting S.S. on metformin?

Metformin is used for type 2 diabetes to manage high blood glucose levels. In this case, S.S has an increased blood glucose level, Metformin will help manage the level to be within range (70-99).

7. Outline the general teaching you would provide S.S. about oral hypoglycemic therapy.

Oral hypoglycemic therapy is used to treat low blood glucose levels. Hypoglycemic medications should be taken as directed to promote adequate action. So taking Metformin at breakfast and atorvastatin at bedtime is best practice.

8. What would you teach S.S. to do if she becomes ill with the flu or viral illness?

Preventing the flu or viral illness is very important with diabetes. Becoming ill can be very detrimental with diabetes so seeking appropriate medical care is very important. Obtaining a yearly flu shot is recommended.

9. What benefits would S.S. receive from exercising?

Maintain or reduction of weight, tighter management of blood glucose levels, and increase blood flow to lower extremities.

10. What would you teach S.S. about exercise?

Regularly exercising, 2 to 3 times a week is helpful when managing blood glucose levels. Exercising can consist of walking, jogging, cycling, or even swimming.

11. Besides the dietitian, what interprofessional and community referrals may be appropriate for S.S.?

- Support groups
- Exercise classes
- Frequent appointments with PCP

CASE STUDY PROGRESS

S.S. comments, “I’ve heard many people with diabetes lose their toes or even their feet.” You take this opportunity to teach her about neuropathy and foot care.

12. Which symptoms lead you to believe S.S. has some form of neuropathy?

S.S stated, "burn or feel like there are pins" in her lower extremities."

13. What other findings in S.S.’s history increase her risk for developing neuropathy?

History of gestational diabetes

14. What would you teach S.S. about neuropathy?

Neuropathy occurs when there is nerve damage, resulting in numbness or tingling in the hands or feet. Meticulous foot care is key for neuropathy as there is an increased risk for injury.

15. Because S.S. has symptoms of neuropathy, placing her at risk for foot complications, you realize you need to instruct her on foot care. Outline 5 points you would include when teaching her about foot care for persons with DM.

1. Avoid barefoot when possible 2. Wash feet with warm, not hot water 3. Observe feet daily
4. Walk regularly 5. Avoid tight shoes or socks

16. What ongoing monitoring will S.S. need for nephropathy and retinopathy?

Ongoing monitoring of blood flow to extremities is important to maintain adequate blood flow

17. At the conclusion of the visit, which statements indicate S.S. has an accurate understanding of the teaching you provided about DM? Select 4 correct options.

a. “When I am ill, I do not need to take the metformin.”

b. “The only place it is safe to go barefoot is in my house.”

c. “It is best to take the metformin at breakfast and dinner.”

d. “Looking at the condition of my feet every day is important.”

e. “I will make an appointment with the eye doctor next week.”

f. “Taking a walk for at least 20 minutes a day will help my DM.”

g. “If I take my medicine, I can eat what I want, and my glucose will be fine.”

h. “I will be able to stop the metformin when my pancreas starts working better.”

i. CASE STUDY PROGRESS

j. 18. S.S. returns to the clinic 6 weeks later for a follow-up appointment. She met with the diabetic educator and is making changes to her eating habits and has started walking. **For each assessment finding, use an X to indicate whether the interventions were Effective (helped to meet expected outcomes), Ineffective (did not help to meet expected outcomes), or Unrelated (not related to the expected outcomes).**

Assessment Finding	Effective	Ineffective	Unrelated
a. Reports stress incontinence when she coughs, sneezes			x
b. BP 130/78 mm Hg	x		
c. Fasting blood glucose level results: 153 mg/dL		x	
d. Weight loss of 6 pounds (2.7 kg)	x		
e. Reports decreased tingling in her toes.	x		
f. Reports continued blurred vision.		x	
g. Eating dinner with her husband every night.			x
h. Hemoglobin A1C level results: 8.2%		x	
i. Reports of frequent urination		x	