

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)
Triglycerides	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.

Her random plasma glucose level is high along with her fasting glucose, hemoglobin A1C, total cholesterol, triglycerides and LDL. HDL is low. Urinalysis being positive for glucose and negative for ketones can indicate there is high amounts of sugar in the blood and need to be excreted

2. Identify 3 methods we use to diagnose DM.

A1C of 6.5% or higher

Fasting plasma glucose level of 126mg/dL or greater

A 2-hour plasma glucose level of 200mg/dL or greater during an OGTT, using a glucose load of 75g

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

Ethnicity, age, unhealthy diet, obesity/overweight, weight, infections (vaginal yeast or candida), vision issues, polyuria, polydipsia, polyphagia

CLASS PREP: Endocrine

4. Which of her assessment findings are consistent with type 2 DM? weight, random plasma glucose level, yeast infections, difficulty reading numbers and reports, feet burning, excessive urination, hunger, and thirst

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?

Incorporate foods that align with her cultural preferences or educate how she can make certain foods healthier. Look into her culture and develop ideas on how to appeal to exercise with certain activities.

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

To help reduce her glucose production lowering her glucose levels

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

Oral hypoglycemic therapy helps work on insulin resistance, decreased insulin production and increased liver glucose production. The prescribed metformin will help decrease liver glucose production while increasing insulin sensitivity resulting in glucose uptake by tissues

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

Continue good hydration and monitor nutrition. Continue medications per doctor's instructions

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

Possible weight loss to help improve insulin effectiveness

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

Exercise can have a direct effect on lowering glucose levels and contributes to weight loss. Regular exercise may may result in a decreased need for drugs to reach target glucose goals

CLASS PREP: Endocrine

11. Besides the dietitian, what interprofessional and community referrals may be appropriate for S.S.?
Community activities that involve movement, nephrologist, ophthalmologist, endocrinologist

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?

Burning or pins in her feet

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

High BP, gestational diabetes

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

I would teach her to check her feet daily for sores or wounds and to wear correct footwear to help prevent wounds

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.

Inspect feet daily, right size footwear, inspect shoes for pebbles or rocks, wear shoes outside, keep any wounds clean

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

Eye exams and blood work to monitor BUN, Creatinine, and GFR

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	