

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)	High
Hemoglobin A _{1c} (A _{1c})	8.8%	High
Total cholesterol	256 mg/dL (6.6 mmol/L)	High
Triglycerides	346 mg/dL (3.91 mmol/L)	High
Low-density lipoprotein (LDL)	155 mg/dL (4.01 mmol/L)	High
High-density lipoprotein (HDL)	32 mg/dL (0.83 mmol/L)	Low
Urinalysis (UA)	+ glucose, - ketones Abnormal (usually no glucose or ketones)	

1. Interpret S.S.’s laboratory results.

2. Identify 3 methods we use to diagnose DM.

- A1C of 6.5 or higher
- Fasting blood glucose of 126mg/dL or greater
- 2-hour plasma glucose of 200mg/dL or greater

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

- Family hx
- Overweight/obesity
- Older adults
- Native Americans & Alaska Natives (highest rate), Black, Hispanics, Asians, Whites
- Metabolic syndrome
- Previous gestational DM w/n 16 years

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

Chronic fatigue, & thirst, constant hunger, & frequent urination, recurrent vaginal yeast infections, possible vision issues

Her A1C & fasting glucose being high, high cholesterol, lipids, & LDL, & low HDL

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?

Help work with her to best understand & meet her specific needs & goals for treatment. Use a patient centered & individualized plan of care. As well as learning about foods specific to her culture and using those to help her plan meals.

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

Often the 1st line when treating type 2 DM. It helps improve insulin sensitivity and glucose transport into the cells & decrease glucose production in the liver. It can also help with mild weight reduction

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

May cause GI upset & diarrhea so should be taken with food. Needs to be held 1-2 days prior to IV contrast & 48 hours after. Should also use in conjunction with lifestyle modifications.

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

Illness may cause glucose to become elevated requiring the need for more frequent glucose monitoring & possible need for increased medication dose (consult provider)

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

Decreased insulin resistance, lowering of blood glucose, weight loss, improved cardiovascular health

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

Wear proper footwear, a brisk walk is good exercise, best done after meals, include warm-up & cool-down period, if glucose is <100 have a 15-g carb snack then recheck levels.

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

Social worker, diabetes educator, support group, PT/OT, endocrinology

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?

Feels like feet are burning or have pins in them

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

HTN, high cholesterol & triglycerides

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

Managing her glucose is key to reducing complications & treating it. It often involves the hands or feet bilaterally & includes s/sx such as loss of sensation, abnormal sensation, pain, & paresthesia.

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.

Examine feet daily, wash feet with mild soap & water & ensure water is not too hot, report signs of infection or nonhealing ulcers to provider, do not go barefoot, do not use heat on feet

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

Monitoring blood glucose closely and ensuring it is within normal range, regular follow ups with provider, reporting any new, worsening, or change s/sx.

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	