IMC Didactic Case-Diabetes Mellitus

Chief Complaint

"I was recently diagnosed with diabetes and would like to have my blood sugar tested. I think that my blood sugar is running low because I have the shakes and a terrible headache."

HPI: Sarah Martin is a 43-year-old woman who comes to the pharmacy for a diabetes education class taught by the pharmacist. She would like for the pharmacist to check her blood sugar before the class begins. She was diagnosed with diabetes mellitus Type 2 about 6 months ago. She has been attempting to control her disease with diet and exercise but has had no success. Her physician has recently started her on glyburide 5 mg. She has gained 15 lb over the past year. She monitors her blood sugar once a day, per her physician, with a range of 215–260 mg/dL. Her fasting blood sugars average 170 mg/dL. She took her glyburide this morning but didn't have time to eat breakfast.

PMH: Type 2 DM x 6 months
HTN x 15 years
Asthma x 20 years
Dyslipidemia x 10 years
Morbid obesity x 15 years

FH: Father has history of HTN. Mother has a history of dyslipidemia. Brother has DM secondary to alcoholism.

SH: Has been married for 21 years. She has two children who are teenagers. She works in a floral shop making deliveries. She does have limited medical/prescription insurance through her husband's factory job. She smokes ½ pack per day of cigarettes (down from 1 pack per day 6 months ago) and drinks alcohol occasionally (five beers/wine per week).

Meds:
Glyburide 5 mg po BID
Lisinopril 20 mg po once daily
Advair 250mg/50mg 1 puff BID
Fluoxetine 20 mg po Q AM
EC ASA 81 mg po once daily
Pravastatin 40 mg po once daily

All: Morphine—hives

ROS: Complains of nocturia, polyuria, and polydipsia on a daily basis. Denies nausea, constipation, diarrhea, signs or symptoms of hypoglycemia, paresthesias, and dyspnea.

Physical Examination: severely obese, Caucasian woman in NAD, R and L fundus exam without retinopathy. Lungs- clear breath sounds, no wheezing or cyanosis. Cardiac- RRR, no MRG. Extremities- femorals, popliteals, and right dorsalis pedis pulses 2+ throughout; left

dorsalis pedis 3+; feet show mild calluses on MTPs, feet with normal sensation (5.07 monofilament) and vibration

VS: BP 165/90, P 98, RR 18, T 37°C; waist circ 38 in, Wt 240 lbs (109 kg), Ht 5'8"

Labs

Na 139 mEq/L	Ca 9.4 mg/dL	***Fasting Lipid Profile:***
K 3.6 mEq/L	Phos 3.3 mg/dL	T. chol 236 mg/dL
Cl 103 mEq/L	AST 15 IU/L	LDL 135 mg/dL
CO2 31 mEq/L	ALT 18 IU/L	HDL 56 mg/dL
BUN 15 mg/dL	Alk Phos 62 IU/L	Trig 223 mg/dL
SCr 0.8 mg/dL	T. bili 0.4 mg/dL	TC/HDL ratio 4.2
Gluc (random) 74 mg/dL	Hg A1c 9.8%	

UA
1+ protein, (+) microalbuminuria

Assessment: The patient reports that she exercises at most once a week and her diet is difficult to maintain due to the nature of her job as a delivery person. Her glycemic control has been maintained with an 8.9% Hg A1c 6 months ago. She has had a moderate weight gain of 15 lb (6.8 kg) over the past year. Her blood pressure and cholesterol are not at goal on the current drug therapy.

Please utilize the following resources in order to determine the appropriate management for Mrs. Martin's worsened DM.

1) What do the 2016 American Diabetes Association (ADA) guidelines say about initiation of therapy in patients with Type 2 Diabetes Mellitus? (updated for 2016 executive summary)

http://care.diabetesjournals.org/site/misc/2016-Standards-of-Care.pdf

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2) What concerns and risks exist regarding the use of glyburide with regard to side effects and efficacy as monotherapy?

(http://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=a56f100f-0f42-4188-81ab-04644b824040)

http://online.lexi.com/lco/action/home/switch?siteid=202

3) In order to follow the ADA guidelines, you decide to discontinue therapy with glyburide and initiate metformin therapy.

- What dose should Mrs. Martin be started on?
- How should dose titration be approached and why?
- What monitoring is necessary in patients on metformin therapy? (dose, monitoring and literature to support starting this)

http://online.lexi.com/lco/action/home/switch?siteid=202

4) It has been three months since Mrs. Martin began a steady dose of metformin 1000mg BID. She presents to the IMC for a follow-up visit and her Hg A1c today is now at 8.2%. Per the 2016 ADA guidelines executive summary, you decide to initiate a second oral agent.

- What would you choose to initiate and why?

ADA Guidelines for hyperglycemia management

http://care.diabetesjournals.org/site/misc/2016-Standards-of-Care.pdf

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5) Since the initiation and maximization of a second oral agent, Mrs. Martin has had to pick up more overnight flower delivery shifts to pay for vehicle damages that occurred while teaching her oldest child to drive. In order to stay awake, she starts drinking one or two Monster energy drinks a night and frequently snacks on Sweet Tarts during her deliveries. After cancelling her previously scheduled follow-up visit five weeks ago, she returns to the IMC for an overdue DPV. It has been 19 weeks since her last visit and she has gained 10 lbs. since then (now 264 lbs). She admits that she is often so tired that she tends to forget to take her medications and has a difficult time making healthy dietary choices. Her Hg A1c is 10.8 today. You ask about her exercise habits and she exclaims, “Nobody has time for that!”. You decide to initiate insulin therapy.

- What methods for insulin therapy exist?
- How should insulin therapy be initiated in Mrs. Martin?

http://www.aafp.org/afp/2011/0715/p183.html

(Pg 184-186)

6) Mrs. Martin understands the consequences of poorly managed diabetes and agrees to your recommendation to begin intensive insulin therapy and self-monitoring of blood glucose (SMBG).

- How would you educate Mrs. Martin on insulin injections and SMBG with respect to frequency and technique?
- How should she respond to low blood sugar readings?

Some glucometer information and comparisons
http://www.diabetesadvocacy.com/glucometers.html

Patient information on managing hypoglycemia. There is also a hard copy of this book in the IMC.

(http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html)

Guidelines on SMBG:

http://care.diabetesjournals.org/site/misc/2016-Standards-of-Care.pdf

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7) Mrs. Martin leaves the IMC ready to tackle the challenge of taking control of her diabetes. After running a few errands, she stops at the pharmacy that evening to pick up her new insulin and diabetic testing supplies. She is shocked when she hears the price and heads home without picking up the prescriptions. When she gets home, her husband reluctantly admits that he was laid off from his job a week ago and that the family is now without health insurance. The next morning, she calls in to the IMC to report her inability to afford her insulin and testing supplies.

- What resources are available through the IMC to help with affordability?

8) After working with the IMC staff, Mrs. Martin is happy to report that she is experiencing significant success with her new insulin regimen. She is highly encouraged to live a healthier life and wants to know what the recommendations are to assist with proper management.

- What goals and recommendations should Mrs. Martin be aware of?
- When should follow-up visits be scheduled and what testing (including referrals) is necessary?

http://care.diabetesjournals.org/site/misc/2016-Standards-of-Care.pdf

(S8, S72)

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