

Case Study Responses

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Note: Readers are encouraged to visit www.InsulinJournal.com to review the details of a Case Study published in the April 2006 issue of *Insulin*.

This was a case of a 56-year-old African American man with diabetes mellitus (DM) who presented for a 1-year follow-up visit. He had been treated for the past few years with metformin 500 mg BID and glipizide 10 mg BID; more recently, rosiglitazone 4 mg QD was added. His current glycosylated hemoglobin (A1C) level was 10.3%.

Question 1. In addition to nutritional and exercise counseling, what is the most appropriate therapy for this patient?

Answer: c. Increase metformin to 1000 mg BID and discuss insulin initiation with the patient.

The patient in this case is taking near-maximal doses of 3 oral antidiabetic agents and, despite good medication compliance, has failed to achieve a goal A1C level of 7.0%. This patient is unlikely to achieve a goal A1C with further titration of his existing agents or with the addition of a fourth agent. Most oral antidiabetic agents reduce A1C levels by 1.5 to 2.0 percentage points at most. He requires a substantial reduction in A1C that cannot reliably be achieved in the absence of insulin. Thus, answer C—titrating metformin to its maximal effective dose of 1000 mg BID and adding insulin—is the correct answer.

Question 2. If the decision was made to initiate insulin, what would be the most appropriate *starting* dose?

Answer: b. Insulin glargine, 20 units daily.

The starting dose of insulin should be distinguished from the dose that the patient is ultimately likely to require. A good estimate of the starting dose is usually 0.2 unit/kg. In the case of this gentleman, who weighs 100 kg (220 pounds), ~20 units of either long-acting insulin glargine or an intermediate-acting insulin would be reasonable. Often, a dose of long- or intermediate-acting insulin at bedtime is essential to correct fasting hyperglycemia. If his postprandial blood glucose levels remain elevated with further titration of his long-acting insulin and with optimal dietary counseling, then the addition of rapid-acting insulin may be necessary.

Question 3. When titrating insulin on the basis of fasting and postprandial blood glucose monitoring, a reasonable strategy is to:

Answer: c. Titrate insulin glargine upward 10% to 20% every 3 days to achieve a fasting blood glucose (FBG) value of <110 mg/dL.

This gentleman has been started on a modest dose of insulin, which is probably less than he will ultimately require. The best gauge of whether he is taking the correct dose of insulin glargine is his morning FBG level. He can be instructed to increase his dose by ~20% every 3 days until he achieves a goal FBG level of <110 mg/dL. Close communication with a medical provider can often assist patients in the titration process.

Question 4. When is the appropriate time to initiate insulin therapy in patients with type 2 DM? What counseling should patients receive before initiation of insulin therapy?

Answer: Insulin therapy should be introduced when oral agents fail to achieve a target A1C level, usually <6.5% or 7.0%. Unfortunately, the introduction of insulin is often delayed because of reluctance by patients and providers. This results in elevated blood glucose levels for years, leading to more cardiovascular complications. Patients should be counseled on the importance of using insulin with oral medications to achieve their A1C goals and should be warned of possible hypoglycemic episodes when A1C targets are approaching.

This case represents an all-too-common scenario of insulin initiation being inappropriately deferred, resulting in years of suboptimal glycemic control with its attendant risk of microvascular and macrovascular complications. The natural his-

tory of most patients with type 2 DM—especially in the absence of lifestyle modifications—is that of β -cell failure, resulting ultimately in an insulin requirement. A common error is reserving insulin as a “last resort” after the use of multiple oral agents has failed, rather than introducing it proactively to prevent further deterioration of glycemic control. Ideally, this patient would have had closer communication with a medical provider—not simply once-yearly visits—and earlier institution of lifestyle modifications and earlier introduction of insulin therapy.

Patients started on insulin should receive teaching on proper administration techniques, including the importance of injection-site rotation. They should also be well versed on appropriate strategies for blood glucose monitoring. They should be counseled on the symptoms of hypoglycemia and correct treatment. Ideally, low blood glucose levels should be treated with 3 glucose tablets or 4 ounces of juice, and blood sugars should be checked ~10 minutes later to ensure adequate treatment. Patients should also receive dietary counseling to assist with glycemic control and, ideally, weight loss. Many patients who require mealtime insulin can learn to match their rapid-acting insulin to their mealtime intake based on an assessment of the carbohydrate content of their meal.

Patients should remain in close contact with their medical provider regarding the results of their blood glucose monitoring so that their insulin can be titrated toward—and maintained at—an optimal dose.

Readers are invited to consider a new Case Study (see page 132) and submit responses to www.InsulinJournal.com before the deadline.