

Additional Information for MLS (Medical Laboratory Sciences):

As an MLS, you know that Type II Diabetes is a condition which is associated with insulin resistance and glucose intolerance, which means that the cells are no longer responding to insulin's signal to allow glucose in, so glucose stays in the plasma, meaning that the cells are intolerant to glucose.

All 3 glucose labs are elevated. Note: the case did not indicate that the patient was fasting, but based on the reference ranges listed, the patient was fasting - 8-hr. fast is recommended for glucose, and a 10-12 hr. fast is recommended for a lipid panel, which was also drawn on Day 3. The diabetic level for fasting specimens is >126 mg/dL, which all 3 levels on Day 1, Day 2, and Day 3 were higher than. An Hgb A1C was also drawn on Day 1. Hgb A1C is a test which indicates how well a diabetic patient has been keeping their blood glucose in check over a period of 2-3 months. Levels >7% indicate poor glycemic control. The patient's result was 9.7% which indicates poor control of blood glucose levels.

Complications of Type II DM include dyslipidemia, which is associated with increased triglycerides and LDL. In the body, excess glucose gets stored as triglycerides. Triglycerides are the main component of VLDL, which then gets broken down to LDL. Increased levels of LDL are associated the development of atherosclerosis, when can lead to occlusion in the blood vessels causing heart attack, stroke, DVT, pulmonary embolism, et... HDL is our "good" cholesterol and helps to remove LDL from the body. The patient's combination of elevated TC, triglycerides and LDL, and decreased HDL put a patient at increased risk of complications associated with dyslipidemia. (Note: scenario lists >40 mg/dL as the reference range for HDL, but NCEP optimal levels are actually >60 mg/dL.)

Increased levels of creatinine are associated with renal impairment. Kidney function can be detrimentally affected by high glucose levels over an extended time period. Filtering capacity is diminished, so substances that normally would be easily filtered through the kidneys and excreted, get retained. Creatinine is commonly measured as an indication of renal function, because creatinine is not normally retained in body. Typically, the main reason that we see increased levels is when normal kidney function is decreased.

Questions:

1. Why are the creatinine levels often elevated in Type II Diabetic patients?
2. Explain the significance of getting fasting levels versus random when monitoring glucose and lipids levels?
3. Explain the significance of performing a HgbA1C? What does it tell us about how a diabetic patient is keeping their disease under control? What is the ideal level that diabetics should keep their Hgb A1C levels under? How often do Hgb A1C levels need to be monitored?
4. What other testing would be appropriate to monitor renal function and increasing permeability of the renal filtering system?
5. Establish a timeline for collecting follow-up lab after discharge