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Contributors to Iron Status: Serum Ferritin, TSAT, and Hemoglobin

### Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCME curriculum.

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### Dr. Munro:

Hello, this is CME on ReachMD. I am Malcolm Munro, a gynecologist from UCLA, and I'm here again with Professor Michael Auerbach, who incidentally wrote the UpToDate section on iron deficiency anemia in pregnancy.

So let's get right into these issues with respect to screening and testing and these various different blood tests. What does the clinician need to know, Michael, about what to measure and when to try to determine who has iron deficiency?

### Dr. Auerbach:

So if we're certainly talking about menstruating women or pregnant women, I think it's very important, even in the absence of anemia, to get iron parameters. And those parameters, the easiest parameters to get, are a serum ferritin and a serum transferrin saturation, which is calculated by dividing the serum iron after an overnight fast by the total iron binding capacity, which is really transferrin. And that gives you the TSAT, the percent saturation. If either of those are low, that's iron deficiency. A low ferritin is absolutely diagnostic, but since ferritin is an acute-phase reactant and goes up with a variety of abnormalities, including the first trimester of pregnancy, a normal ferritin, or even a high ferritin, does not exclude iron deficiency, and that's why you need the fasting TSAT. In the first trimester of pregnancy, 50% of nonanemic – say that again – 50% of nonanemic presenting gravidas are iron deficient based on a low serum ferritin, low TSAT, or both.

### Dr. Munro:

But when should the TSAT be ordered? And you mentioned if the ferritin is normal, it may actually be a false indication. So how does the clinician decide when to add a TSAT to their battery of tests?

### Dr. Auerbach:

It's my opinion [TSAT] should be ordered at the same time as the ferritin. It's inexpensive; it's easy to do; you get the results at the same time. But if the physician would rather just order a ferritin alone, as soon as the ferritin comes back normal or elevated, a TSAT should be ordered. I would order them both at the same time and certainly on all presenting gravidas.

### Dr. Munro:

Are there any issues with women on supplementation as to what and when the testing is done?

### Dr. Auerbach:

On an overnight fast, but here's the reason: ferritin is unaffected. So just to reiterate, if the ferritin is low, you're done, no problem; iron deficiency is present. But the serum iron is extremely labile, so if somebody takes a prenatal vitamin containing iron or an iron supplement or even food containing iron and the blood is drawn, the serum iron will be elevated because of this supplementation or food, and you will get a spurious elevation of the TSAT. So it should be ordered on an overnight fast.

**Dr. Munro:**

So I think there are some major points here and it builds upon what we've discussed previously, that iron deficiency is common. It appears before iron deficiency anemia and can be symptomatic. So the notion that we're just going to be measuring hemoglobins doesn't really make sense. Remember that the anemia is the endpoint of iron deficiency, not the beginning.

Thanks for listening. We'll see you with the next one.

**Announcer:**

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