Title: Improved compliance with hemoglobin A1c vs. 2-hour glucose tolerance testing in the postpartum period

Background: Gestational diabetes (GDM) affects nearly 7% of all pregnancies in the United States. Women with GDM are seven times more likely to be diagnosed with overt Type 2 diabetes later in life. Accordingly, women with GDM are advised to complete a 2-hour glucose tolerance (GTT) test between 4 and 12 weeks postpartum to evaluate for persistent glucose intolerance; however, the nationwide compliance rate for this test is approximately 35%. The 2-hour GTT is neither convenient nor easy. Aside from the pregnant/postpartum state, Hemoglobin (Hgb) A1c is considered an alternative test for diagnosing glucose intolerance. Hgb A1c does not require ingestion of a glucose solution, involves only a single blood draw, and is readily available.

Objective: To examine the hypothesis that postpartum patients would be more compliant with Hgb A1c testing than with the traditional 2-hour GTT.

Methods: A prospective randomized trial was performed that included all postpartum GDM patients, who were delivered at Memorial Health University Medical Center between November 2019 and November 2020. A randomized block design was used to assign patients to either a traditional 2-hour GTT or a hemoglobin A1c. Primary outcome was compliance with testing. Patients were recruited, consented, enrolled, randomized, and informed of group assignment during their inpatient postpartum stay. Patients received a reminder call at 4 weeks postpartum, and they had until 12 weeks postpartum to complete testing.

Results: Of 83 eligible patients, 80 were randomized (GTT N=40, A1c N=40). Overall, 23/80 (28.75%) completed testing. More patients returned for Hgb A1c than GTT (Hgb A1c 17/40, 42.5% vs. GTT 6/40, 15%; p=0.007). Analysis of compliance by demographics was also examined. When analyzed based on age, patients ages 30-39 were more likely to return for Hgb A1c than GTT (Hgb A1c 6/18 vs GTT 1/20, p=0.024). There was no significant difference in compliance for either test among patients 29 and younger (p=0.27) and patients 40 and older (p=0.49). When analyzed based on race, white patients were more likely to return for Hgb A1c than GTT (Hgb A1c 14/26 vs GTT 2/22, p=0.001), but there was no significant difference in compliance for either test among non-white patients (p=0.95).

Conclusions: Postpartum patients are more likely to comply with Hgb A1c than a 2-hour GTT. White patients and patients ages 30-39 are also more likely to comply with Hgb A1c testing as opposed to a 2-hour GTT.