immunoassays before and after treatment of samples with heterophile blocking reagent (HBR) nonmurine solution (Beckman assay) and heterophile blocking tubes (HBT) (Roche assay; Scantibodies Laboratory). The absolute difference and the percent difference between untreated and treated results were calculated. Serial dilutions were also performed (primary method) and percent recovery calculated.

Results: From the 112 physician requests, five cases of HA interference were identified. The HA frequency was 6.7% (n = 3) for the Beckman assay and 3.0% (n = 2) for the Roche assay. The range of hCG concentrations on all the evaluated samples was 0.1-2,797.0 IU/L (mean 71.1 IU/L; median: 10.2 IU/L). The presence of HA was detected using HBR/HBT reagents in three cases with a percent difference from the untreated sample of -80%, -51%, and -64% from the initial value of 13, 5.5, and 9 IU/L, respectively. The two cases not detected by HBR/HBT reagents were detected due to discrepant results with the secondary method (50.44 vs 1.74 IU/L and 56.6 vs <1.0 IU/L) and nonlinear serial dilution (recovery outside 80%-120%). HA-negative cases showed an absolute difference of ±0.9 IU/L at <10 IU/L and percent difference ±10% from the untreated at concentrations >10 IU/L for the Beckman assay; and an absolute difference of ±1.2 IU/L at <10 IU/L and a ≤10% difference from the untreated at concentrations >10 IU/L for the Roche assay.

Conclusions: Frequency of HA interference was similar between the Beckman and the Roche assays (6.7 vs 3.0%, P = .357). The HBR/HBT blocking reagents failed to detect 40% of HA interference cases and should not be solely used for these investigations. Multiple strategies including the use of serial dilutions and measurement using an alternative platform are critical to identify the presence of HA.

46

Evaluation of Hemolysate Hemoglobin to Estimate Patient Hematocrit in RBC Folate Testing

David C. Lin,1 Sonia L. La‘ulu,2 Jun Lu2
Julia Spadafora,2 Jonathan R. Genzen,1,2 University of Utah, Salt Lake City, 2ARUP Laboratories, Salt Lake City, UT

Background: Folate is a water-soluble vitamin essential for cell growth and division. RBC folate determination is obtained by measuring the folate concentration in a whole blood (WB) hemolysate solution and dividing it by the patient’s hematocrit (Hct; %). RBC folate presents a logistical challenge in the context of send-out testing; frozen storage is ideal for WB specimens prior to folate testing, although freezing lyses RBCs. A corresponding nonfrozen WB specimen or a supplied Hct (from the specimen prior to freezing) is therefore required. The following experiments were performed to determine whether hemoglobin (Hb) measurement from the hemolysate used for corresponding folate testing can accurately estimate Hct and therefore be used in calculating RBC folate.

Methods: Fifty-four residual, clinical WB specimens previously tested for RBC folate on Beckman UniCel DXI 800 immunoanalyzers were obtained from -20°C storage and deidentified according to a protocol approved by the internal review board. Client laboratory-supplied Hct (cHct), which spanned low to high values, was recorded for each specimen. Two hemolysates were generated from WB samples using vendor-specific ascorbic acid solutions and tested for folate on their corresponding instruments (ie, UniCel DXI 800 and Roche Cobas e602). Hb measurement on both hemolysates was then performed on a Roche Cobas c501 instrument using a Pointe Scientific cyanmethemoglobin assay. Hemolysate Hb results were compared to the cHct values using Pearson correlation, and a linear regression model was used to estimate Hct (eHct). RBC folate was compared using hemolysate folate (from Beckman and Roche platforms) with both cHct and eHct values.

Results: Specimens from 26 men (age, mean ± SD: 54.0 ± 24.3 yr) and 28 women (age, mean ± SD: 56.6 ± 18.9 yr) were included in the study. The cHct of specimens used in this study ranged from 16.2% to 58.6% (mean ± SD: 34.8 ± 8.2%). Using cHct values, RBC folate results from Beckman and Roche immunoassays ranged from 205 to 1,684 ng/mL and 548 to 1,896 ng/mL, respectively. The Pearson correlation between the RBC folate values obtained on the two platforms using cHct was approximately 93%. There was a substantial correlation between cHct and eHct, using hemolysates generated with Beckman (Pearson correlation at 95%) or Roche (Pearson correlation at 91%) protocol dilutions. The RBC folate values calculated based on eHct showed stronger correlation with values calculated using cHct on both platforms: Pearson correlation values of 98% (Beckman) and 92% (Roche).

Conclusion: Our results demonstrate that Hct can be accurately estimated from Hb measured in the same hemolysate used for folate testing. This process may eliminate the need for pretesting of Hct prior to frozen transport and enable greater automation of RBC folate testing by laboratories.

47

A Survey of Microbiology Consultations in an Urban Academic Center

Phillip McMullen, Ernest Chan, Vera Tesic, Kathleen Beavis, Angella Charnot-Katsikas; University of Chicago, Chicago, IL