



Educational Discussion: Accuracy Based Urine

2017-B Accuracy Based Urine Survey (ABU)

The ABU-B Survey used pooled real urine specimens selected to achieve specified albumin concentrations. The Survey materials are expected to be free of artifactual matrix effects, and therefore comparisons may be made between participants' results, or method group median values, and to the reference method values for urine albumin that will reflect performance expected for patients' samples. Similarly, a participant's results can be compared to the method group mean or median values for urine calcium and creatinine. The number of participants who used each method type was small so the medians were used for comparison and there is some uncertainty in the median values.

As was observed in previous ABU Surveys, the agreement among median results from different methods for urine creatinine and calcium was good.

For urine albumin, results from the higher concentration samples ABU-05 and ABU-06 had good agreement among the immuno-turbidimetric methods from Abbott, Beckman and Roche but these values were approximately 12-14% lower than the Siemens Dimension Vista immuno-nephelometric method. The reference method value for sample ABU-06 was close to that of the nephelometric method, but for sample ABU-05 was in between the values for the two method types. These observations are consistent with the performance observed in the ABU-A mailing of 2017. At these concentrations of urine albumin, the agreement among medians is consistent with the $\pm 13\%$ maximum bias goals set by the Laboratory Working Group of the National Kidney Disease Education Program (Miller WG et al. Standardization of Urine Albumin Measurements: Status and Performance Goals. J Applied Lab Med 2017;2:423-9). However, the small number of participants prevents any firm conclusions to be made from the data.

Sample ABU-04 had a low urine albumin concentration that was below the analytical measurement range for the Beckman and Roche methods. As was observed for the higher concentrations, median results for the Abbott immuno-turbidimetric method were lower than from the Siemens immuno-nephelometric method. However, both methods had median results 40-50% lower than the reference method. Larger biases at lower urine albumin concentrations are consistent with results from the ABU-A mailing and were also observed in a large study that used 332 individual urine samples (Bachmann et al. State of the art for measurement of urine albumin: comparison of routine measurement procedures to isotope dilution tandem mass spectrometry. Clin Chem. 2014;60:471-80).

Also of note were the range of urine albumin results from the lowest to highest results reported by participants. At the low concentration, 11 mg/L, values were 83% different; at 96 mg/L values were 40% different; and at 518 mg/dL values were 55% different. These differences are large enough to affect risk classification and treatment decisions for people with kidney disease. Clearly there is a need for improved standardization of urine albumin results.

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Accuracy Based Testing Committee