Discussion

The CYS-A 2019 mailing consisted of three serum samples. CYS-01 and CYS-03 samples were pooled off-the-clot, fresh frozen human serum without any manipulation or additives. CYS-01 came from normal volunteers, most of whom as expected had reasonably good renal function and thus had a cystatin C about 0.7 mg/L. CYS-03 was prepared by pooling off-the clot serum from a group of volunteers who had chronic renal disease. As expected this pool's cystatin C was elevated to slightly above 2 mg/L. CYS-02 was prepared by taking off-the-clot serum from normal healthy volunteers, pooling it, and supplementing the pooled serum with human cystatin C that had been isolated from human serum.

The main conclusion we draw from this CYS-A 2019 data is that all vendors' cystatin C measurement procedures have improved their calibration accuracy markedly as can be seen in Figure 1 below. Now all the method-specific means are within a few percent of the all-method means. In the CYS-A 2014 Survey, we sent out two commutable off-the-clot human serum pools, one collected from normal, healthy volunteers and a second pool from patients with chronic kidney disease (CKD).[1] These two CYS-A 2014 pools were prepared in a manner that is essentially identical to the way the current CYS-A 2019 CYS-01 and CYS-03 pools were prepared. The 2014 method-specific results scattered far more about the all-method mean, from about -12% bias to +29% bias, making use of eGFRcys and eGFRcr-cys equations for accurate assessment of a patients renal status somewhat questionable. For methods with fewer than ten laboratories reporting results, means are not calculated and thus are not plotted in Figure 1. However, looking at their method-specific medians compared to the all-method medians leads to fairly similar conclusions.

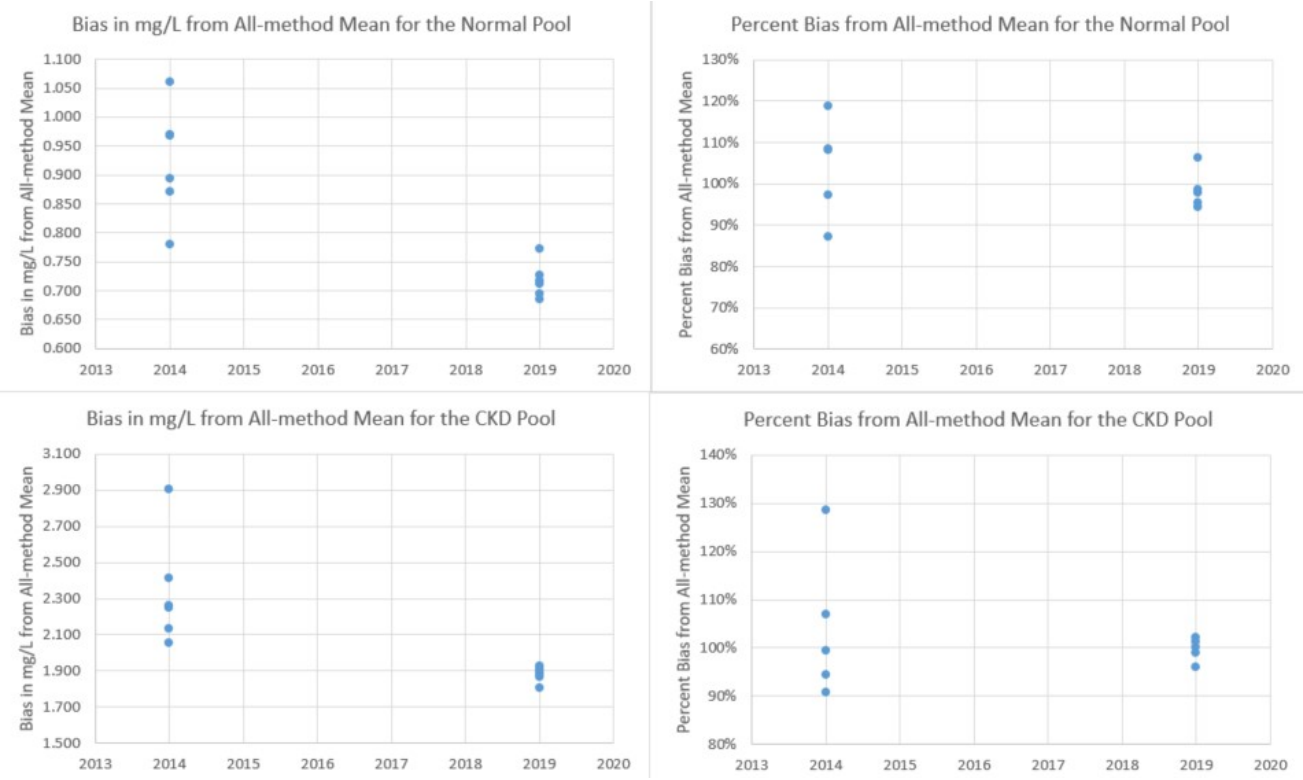

Figure 1. Absolute bias and percent bias from all-method mean (mg/L) in 2014 and 2019

Overall, we conclude that cystatin C reagent, calibrator, and instrument IVD vendors have markedly improved the accuracy of their measurement procedures over the past five years. This improvement should allow for much more accurate eGFR estimates when using the cystatin C or combined creatinine-cystatin C estimating equations.[2, 3]

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References:

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