The Chemistry Resource Committee recently reviewed the reporting of total CO₂ (tCO₂) on the AQ Survey to determine the need for reporting both as a calculated value and a measured value. Point-of-care instruments that determine blood gas concentrations measure the pH and the pCO₂ and usually calculate both the bicarbonate and tCO₂ using the Henderson-Hasselbalch equation. The tCO₂ and is the sum of the numerator and the denominator of the Henderson-Hasselbalch equation.

For the i-STAT system, Abbott has determined that the tCO₂ is a measured quantity for the CHEM8+ cartridge and states the following: “On the CHEM8+ cartridge, tCO₂ is metrologically traceable to the IFCC tCO₂ reference method. The implication of direct traceability to this tCO₂ reference method - and not to pH and pCO₂ standard reference materials - is subtle but significant: the CHEM8+ is independent of the pH and pCO₂ traceability. Given the metrological traceability of the CHEM8+ tCO₂ measurement, the traceable tCO₂ is considered to be a measured analyte.” Thus, even though the tCO₂ is a calculated value on the i-STAT with the CHEM8+ cartridge, Abbott considers this a measurable result for the above reason. Further, bicarbonate is calculated from the Henderson-Hasselbalch equation and would vary by a fixed amount from the calculated tCO₂ for a given pH and pCO₂. Based on the above, the committee decided that beginning with the AQ-C Survey, all tCO₂ results would be considered calculated and the separation of measured and calculated would be terminated. Further, only tCO₂ would be reported by participants and not bicarbonate.

Ronald J. Elin, MD, PhD
Chemistry Resource Committee

In an effort to help in the standardization of creatinine measurements, the CAP will begin segregating creatinine results according to the type of calibration process, traditional calibration or IDMS-traceable calibration, used in your laboratory. The data shown in the current mailing shows a small, but statistically significant, difference in measured creatinine according to the type of calibration process that is used. Please help us in this effort by providing us with the type of calibration process used in your laboratory. Laboratories not indicating calibrator type were evaluated by All Instruments Comparative Method).