Meeting Report: Preparing for Critical Care Analyses in the 21st Century, 16th International Symposium

To the Editor:
The symposium Preparing for Critical Care Analyses in the 21st Century was held February 18–21, 1996, at the Hilton Waikoloa Village, Waikoloa, HI. This symposium, the 16th in a series, was cosponsored by the AACC Electrolyte/Blood Gas Division and the Japan Society for Clinical Chemistry, Committee for Blood Gases and Electrolytes. Approximately 100 scientists representing 14 countries attended the meeting, which was dedicated to the memory of Graham M. Widdowson, a founding member of the AACC Division.

Five one-half day sessions focused on the rapidly changing field of critical care analysis: new technologies on the horizon, and how they will be implemented in laboratory practice in the near future. The first session, New Perspectives on Blood Gas Analysis, chaired by Onno W. van Assendelft (Centers for Disease Control and Prevention, Atlanta, GA) featured a review of recent work in the development of blood substitutes, as well as data from CO-oximetry and hemoglobin determinations in the presence of blood substitutes. Also covered in this session were the correct usage of analytical indices to evaluate blood oxygenation in the lungs, and new developments and findings in the areas of quality control and sample handling as related to blood gas determinations. The session entitled Point of Care Testing—Technology and Clinical Objectives, led by Mary Burritt (Mayo Clinic, Rochester, MN), presented and took a critical look at the economic models used to justify point-of-care testing. This was followed by a review of new instrumentation for point-of-care testing, and the experiences of two clinicians using one of these systems at their institutions. Two sessions focused on Sensor Technologies and Analytes for the Future. These sessions were chaired by Kazuo Yasuda (Hitachi, Tokyo, Japan) and Jay Johnson (Yellow Springs Instruments, Yellow Springs, OH). A variety of emerging sensing technologies for critical care were described, including: optical sensors for blood gases and electrolytes (and their application in near-patient situations) and biosensors for measurement of glucose, lactate, ionized magnesium, and DNA in blood and serum. Non-invasive sensing technologies for glucose, and anesthetic agents were also introduced. The final session of the meeting was devoted to Standardization—Reference Materials and Methods and was cochaired by Katsuhiro Kuwa (University of Tsukuba, Tsukuba, Japan) and Charles Sachs (University of Paris, Paris, France). Ongoing efforts at standardizing the measurement of electrolytes in Japan and the US were described in detail. New proposals for standardizing the measurement and reporting of ionized magnesium, glucose, and lactate were also introduced.

The Proceedings of the meeting have been published and are available for a small cost to cover printing and postage. I may be contacted at: phone 508-359-3521, fax 508-359-3955, e-mail paul.dorazio@chirondiag.com, for further information.

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Cardiac Troponins T and I Before and After Renal Transplantation

To the Editor:
Cardiac troponins T (cTnT) and I (cTnI), structural proteins of the thin filament, are sensitive markers for myocardial injury [1]. In unstable angina, abnormal cTnT and cTnI concentrations have been linked to a high short-term incidence (within 6 months) of adverse cardiac events [acute myocardial infarction (AMI) and death] [2]. Studies of serum of patients with chronic renal failure have shown that cTnT [Cardiac T; Boehringer Mannheim (BMC), Indianapolis, IN] is abnormally increased more frequently than cTnI, suggesting that cTnT may be more nonspecific [3, 4]. High troponin T concentrations in these patient groups could be caused by reexpression of troponin T in regenerating skeletal muscles (as observed by Bodor et al. in patients with Duchenne muscular dystrophy [5]), nonspecificity of the existing cTnT assay, or minor myocardial injury [6]. Recently, BMC has released a second generation ELISA cTnT assay modified by moving the capture antibody to become the labeled antibody and using an entirely new capture antibody [7].

We evaluated both cTnT assays on the BMC ES300 analyzer (instrument supplied and supported by BMC) against a cTnI assay (cTnI; Behring Diagnostics, Westwood, MA) on the Opus Plus (supplied and supported by Behring) using serum of 26 patients collected before and after renal transplantation. The upper reference limit (URL) for both cTnT assays was 0.1 μg/L [8]. The URL for cTnI was 0.5 μg/L, although a cutoff of 2.5 μg/L is recommended for diagnosing AMI [9]. Previous comparisons of cTnT and cTnI in hemodialysis patients have been criticized because cTnT cutoff limits for AMI were set at the URL whereas recommended cutoffs for cTnI were above the URL [6]. A retrospective clinical follow-up of these patients was conducted for the presence of AMI or cardiac death by the attending physician 6 weeks after the collection of the posttransplant sample.

Fig. 1A and B show results of samples containing at least one abnormal cTnT result. The original cTnT assay produced positive results in 14 of 26 (54%) pretransplant samples and 3 of 26 (12%) posttransplant samples. Corresponding results for the modified assay were 4 of 26 (15%) and 1 of 26 (4%), respectively. In all but two cases, posttransplant serum results were lower than pretransplant values. When a cTnT cutoff of 0.2 μg/L is used (as recommended for the BMC Rapid cTnT