

Clinical Chemistry Analyzer Evaluation

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Background

The Oxidative Stress Research Centre at the Cape Peninsula University of Technology (CPUT) is part of the department of Biomedical Sciences in the Health and Wellness Sciences Facility. The primary “goal” of the department is the training of medical laboratory technologists/scientists. The research centre’s main focus is the measurement of oxidative stress markers and the quantification of anti-oxidants and their activity in vivo and in vitro.

As part of our in vivo investigations, we focus on both animal and human intervention studies. Our students are from the Southern African region and vary in background, some being medical technologists and some with little or no clinical laboratory experience.

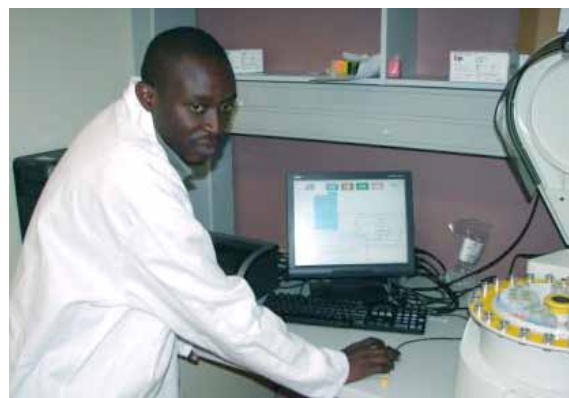
CPUT was approached to do an evaluation of the new EasyRA Clinical Chemistry Analyzer. At the time, we expressed interest in a new instrument and this gave us the opportunity to evaluate the instrument before purchasing.

Requirements

We required an instrument to determine basic clinical chemistry biomarkers in serum. The sample numbers are normally low for research projects, usually about 600 samples per study or on average 100,000 tests per year. We thus required a small instrument where speed is not critical. The EasyRA Clinical Chemistry Analyzer had a small footprint with 120 tests per hour (> 300 tests including ISE), which met our requirements. The system is fitted with an ISE module, a requirement for some of our studies. The EasyRA has an advantage for labs with small sample sizes, because of the precision ceramic dilutor pump.

Certain requirements for the instrument included user-friendly operation and sample reproducibility as samples are analyzed in triplicate for statistical analysis. Reproducibility was the major problem we encountered with previous analyzers. *(continued)*

“Medica’s EasyRA Clinical Chemistry Analyzer has proven itself as a small, but powerful, instrument in our laboratory”



Summary

After the installation of Medica's EasyRA Clinical Chemistry Analyzer it was soon apparent that the color-coded menu system and touch screen made for easy operation. The software is extremely user-friendly, allowing easy and quick training of the postgraduate students who have had no prior training on clinical analyzers. Troubleshooting is made easy for the operator by flashing warnings, indicating potential problems.

All the information for each test is stored on a RFID chip on the wedge. When the wedge is inserted, the chip registers the number of tests performed on that wedge, on-board stability, and alerts you if there are insufficient reagents before a specific run. The calibrator and control ranges are automatically loaded from the CD provided. The software warns you before a run if a calibration is required. Some of our new research projects require a variety of other tests which the EasyRA can accommodate: electrolytes, for example, which can be accomplished with the ISE module.

The reproducibility of the data was better than anticipated. The differences between the individual results of the triplicate assays were negligible, permitting samples to be analyzed in duplicate, which is desirable with limited sample volumes. In an experiment to determine the reproducibility, we measured total cholesterol and GGT 25 times on the same serum sample. The %CV was 1.41 and 1.05 for the respective analytes. This was a great improvement over the almost 8% CV from the previous analyzer.

Test	n	Mean	SD	CV	Precision Goal
Total Cholesterol (mmol/L)	25	7.21	0.10	1.41%	1.5% CV
GGT (U/L)	25	58	0.61	1.05%	2.0% CV

Conclusion

The Medica EasyRA Clinical Chemistry Analyzer has proven itself as a small, but powerful instrument in our laboratory. The system is reliable and easy to operate. Training of new users is simple. The software makes for easy loading of calibrator and QC ranges and keeps track of the calibration intervals. The RFID chip ensures that the correct reagent protocol is followed. Because of the limited volume of sample from animal studies, the requirement of low sample volumes allows for a larger variety of assays to be performed on the same samples.

The EasyRA's best feature is its good precision. This allows for a reduction in the number of tests repeated and thus a reduction in reagent cost, sample and time.



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