DRY CHEMISTRY

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Introduction

Dry chemistry refers to the use of strips impregnated with dry reagents to which the specimen is added. This assessment focusses on quantitative analysis of the chemical reactions by desktop analysers. The types of analysers considered are the Reflotron, Spotchem and Vitros. The conventional analysers used for comparison is the Express 550.

Applications of the dry chemistry that were considered were well-patient screening, use in health clinics, mobile health services, polyclinics and hospital in-patients including point-of-care testing in critical care areas. The aspects that were considered were technical features, human resource and training, turn-around-time, cost analysis and potential use in patient care settings.

Methodology

The methodology used was a survey of the literature, technical information from equipment suppliers, a local survey and data from hospitals on costs and workload.

Considering first the technical features and performance, it was found that the three systems were easy to operate and the results provided were comparable with results obtained by standard laboratory methods. They had good linearity and clinically adequate measurement ranges. They are appropriate for low volume testing, the throughputs varying from 10-30 tests per hour using ‘single’ test strips

With respect to human resource and training, the performance of non-laboratory personnel was better where the operations was simple and there were few manual steps. However, with proper training the dry chemistry systems can be operated by non-laboratory technologists.

Results

In considering the different components of turn-around-time, it was found that delays in specimen collections, sending specimens to the laboratory and review of test results were more than the analysis times.

Cost considerations addressing costs of equipment, reagents, consummables, equipment maintenance and manpower, dry chemistry worked out to be twice the cost of conventional laboratory testing.

For well-patient screening, it was felt that careful consideration of current technologies needs to be given.

Conclusion

It is recommended that in critical care areas, dry chemistry is recommended only in the absence of rapid transport systems and electronic transfer of results. In ambulatory care, dry chemistry is recommended for situations with low volumes, inaccessibility to central laboratories and unavailability of laboratory technologists. Dry chemistry is not recommended for wellness screening programmes.