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The Performance of the Chem-1 Revisited: An Evaluation after 3 Years

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Summary: An evaluation of the Bayer-Technicon Chem-1 multitest analyzer is described over the period 1989–1992. Various aspects like daily use, running costs and quality assessment are discussed. The whole process regarding the performance, ranging from negative feelings in the first year to satisfaction in the third, is followed critically.

Introduction

In 1988 we initiated a complete reorganization of the routine chemistry division of our laboratory. The most important reasons for this were economics, technical aging of the existing equipment and the need for cost containment, as well as streamlining of the sample handling procedures.

The existing equipment consisted of a Technicon SMAC for electrolytes and substrates and LKB reaction-rate analyzers for enzymes, together with a DuPont ACA III for emergencies 24 h a day and a Technicon RA-1000 for back-up.

Basic requirements were:

1. A test capacity during office hours of at least 5000–6000 tests per day.
2. Two or three identical instruments for the whole routine test panel.
3. Emergency testing on the same instrumentation 24 hours per day.
4. Reporting time of about 30 minutes after admittance of the sample.
5. Acceptable and competitive price for the running costs.

In addition to these requirements we took into consideration: precision and accuracy aspects, technical aspects including computer facilities, reputation of the instrument and/or manufacturer, acceptability to the personnel and environmental aspects regarding the reagents.

After lengthy discussions with manufacturers as well – understandable because we are one of the largest hospital laboratories in The Netherlands – we chose the Technicon Chem-1. We were aware of the risk we were taking. As is known, the instrument was launched in 1985 in Paris with enthusiasm and success, but subsequently given up afterwards in a number of places. We finally arrived at an acceptable agreement with Bayer-Technicon, which was also based on a long-lasting relationship.

An important part of this agreement, an extensive testing of the performance of the instrument, has already been described earlier (1). This evaluation led to a positive decision regarding the purchase of two instruments with revised software. Earlier instruments had been introduced and were not accepted in other Dutch laboratories. In October 1989 our instruments were installed in the laboratory for use during office hours by 9 well-trained technicians, while in March 1990 all routine (20 chemistries) and most of the emergency tests were run at night and during the weekends as well by 40 technicians in rotating shifts.