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INTERLABORATORY QUALITY ASSURANCE PROGRAM FOR DETERMINATION OF BLOOD GLUCOSE-6-PHOSPHATE DEHYDROGENASE ACTIVITY IN TAIWAN.

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The nationwide neonatal screening of glucose-6-phosphate dehydrogenase (G6PD) deficiency in Taiwan was started on July 1, 1987, and a follow-up system comprising of seventeen referral hospitals, including outlying islands, were organized for confirmatory test, medical care and genetic counseling. To assess the reliability of the confirmatory test, an interlaboratory quality assurance (QA) program for G6PD assay was developed. Workshops of G6PD assay were held for the referral hospitals to standardized the G6PD quantitative assay procedure and methods for calibration of spectrophotometer and micropipette. The lyophilized quality control materials of different activities of G6PD were prepared from red blood cells. Periodically (1-2 month), 3 or 5 specimens kept in dry ice were sent to each of the referral hospitals by speed post delivery. The external quality assurance results were evaluated and compared to the reference values determined by our laboratory. For the participants with system errors, troubleshooting proceeded with either telephone calls and/or visiting the laboratories by the staff from our laboratory immediately. There are 21 laboratories participating in the quality assurance program at the present time. From January 1988 to June 1994, 61 quality assurance services were performed. 150 (14.5%) abnormal QA results were found, which were attributed to clerk (16/150, 10.7%), experimental (36/150, 24%), and instrumental (70/150, 46.7%) errors. Most of the experimental and instrumental errors were found in laboratories without strictly executed internal QA. The interlaboratory quality assurance program had provided a good system for monitoring the performance of the referral hospitals and might be a guidance for the referral hospitals to correct their errors. The results also indicated that despite all the efforts of a good external QA program, the overall quality of the clinical laboratory services can not be achieved without a strictly executed good internal QA practice in each of the individual clinical laboratories.

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