

THE EXTERNAL QUALITY ASSESSMENT SCHEME IN HAEMATOLOGY: TEN YEARS' EXPERIENCE AS A PARTICIPATING LABORATORY

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ABSTRACT

Background: The attainment of quality services in a laboratory requires a comprehensive quality assurance program which includes both internal and external quality control material. External Quality Assessment Scheme (EQAS) programs are accepted around the world as an invaluable tool by laboratories to assess the performance of their testing systems. Results are objectively compared to other laboratories, using the same methodologies for every parameter.

Aims & Objectives: The goal of this study was to review EQAS results from time to time in an effort to improve the performance of the laboratory.

Materials and Methods: Observational study done at Pramukhswami Medical College, Shree Krishna Hospital, Karamsad from January 2003 to December 2013. In the current study, our EQAS test results have been evaluated for the past ten years, from 2003 to 2013. One EDTA whole blood sample for blood cell counts and 2 slides for peripheral smear examination and reticulocyte count are received quarterly in a year. The test results of all blood samples and peripheral smears for cell morphology and reticulocyte count were analyzed and documented.

Results: Satisfactory results were obtained in all the cycles except twice. Discrepancy was observed in white blood cell (WBC) counts. Root cause analysis was performed and necessary action was taken.

Conclusion: This participation in EQAS over the last ten years has helped us significantly to improve our laboratory services in terms of performance evaluation, patient care and overall quality of laboratory practices.

Key Words: External Quality Assessment Scheme; Quality Control; Quality Assurance; Laboratory

Introduction

External Quality Assessment (EQA) and Proficiency Testing (PT) are valuable tools in the quality improvement process. They provide objective evidence of laboratory competence for customers, accrediting bodies and regulatory agencies. It is also important to consider that every EQA/PT scheme has some limitations, and it is not appropriate to use EQA/PT as the sole means for evaluating laboratory performance.^[1,2] Therefore, there is a need to underline that internal quality control (IQC). EQA/PT and other tools have to be implemented to monitor and improve the quality in laboratory diagnostics. Programs like this, offer valuable benefits to the participating laboratory, in terms of performance evaluation, improvement in patient care, and the overall quality of laboratory practices.^[3,4] The organizing laboratory, that conducts such an EQAS periodically, assesses the registered participating laboratory. Such a registration is not mandatory, but is desirable. To review and assess the quality of laboratory practices, our haematology laboratory services were registered in 2003 under the ISHTM – AIIMS External Quality Assurance Programme (EQAP), Haematology department, AIIMS New Delhi. Since 2003, we are participating, and have been receiving samples four times a year. Here we share

our experience of ten years.

Materials and Methods

Blood Samples

EQAS blood samples from the All India Institute of Medical Sciences, New Delhi were received and processed at Central Diagnostic Laboratories, Shree Krishna Hospital, Karamsad, Gujarat. For each year (2003-2013), every four months, samples were received at our centre for specific tests recommended by the organizing laboratory. All the samples were handled as a part of routine work samples, and recommended tests were performed by the concerned laboratory technician on duty. The tests were performed on the same day of receipt of the samples, and results mailed to the organizing laboratory within 20 days.

Test Performed on Blood Samples

During each cycle, 1 whole blood EDTA sample for blood cell counts and 2 slides - one for peripheral smear examination, stained by Giemsa stain and one for reticulocyte count, stained by methylene blue were received. We also received a brief clinical summary along with the peripheral smear slide. In our laboratory, the

blood samples were run on a Sysmex KX 21 automated cell counter for four times, and the highest and the lowest results were selected. All the prints of the histogram were preserved. The stained slides were examined for differential leukocyte counts, red blood cell morphology and reticulocyte count respectively.

Results

The following test parameters were tested and documented – WBC count, RBC count, Haemoglobin, HCT, MCV, MCH, MCHC, Platelet. The peripheral smear slide was examined for the differential leukocyte count & red blood cell morphology and retic slide for reticulocyte count. All the findings were documented.

Table-1: Results of ten years

Year	Results
2003	Satisfactory
2004	Satisfactory
2005	Satisfactory
2006	Satisfactory
2007	Satisfactory
2008	Unsatisfactory in 1 cycle
2009	Satisfactory
2010	Satisfactory
2011	Satisfactory
2012	Satisfactory
2013	Unsatisfactory in 1 cycle

Twice discordant results were obtained in the WBC counts. Both the times, root cause analysis was done to find the cause of discordance and random error was found to be the issue. In both these instances, the EQAS result was labelled as 'unsatisfactory'. The samples were then sent to two NABL accredited laboratories for Inter-laboratory comparison and results were found to be satisfactory.

Discussion

The EQAS program is a valuable management tool devised to improve the efficiency and service of a laboratory, in particular, and a hospital in general.^[5] The program provides an opportunity to the participating organizations to compare activities, and modify their own practices, based on what they learn.^[6,7] In a clinical laboratory service, EQAS evaluates the performance of procedures, equipment, materials and personnel and suggests areas for improvement.

As a participant of EQAS, we performed all the prescribed tests by strictly following the departmental SOPs and manufacturer's instruction, considering each lot as routine working samples. The peripheral smear findings and the reticulocyte count results were satisfactory in all the instances. Discordance arose twice in the WBC counts and root cause analysis was performed.

Conclusion

An EQAS program plays an important role in improving the efficiency of a laboratory service, and thereby optimizes the overall quality of a health care system. In the last nine years, we could significantly improve our laboratory services in terms of performance evaluation, patient care and overall quality of laboratory practices. [8, 9] We believe that global participation in such an EQAS program will definitely improve the quality of a hospital service, because no health care facility can be totally self-sufficient, and there is always a scope for improvement and development in a system.

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