

## Experience of The External Quality Assessment Scheme in Haematology at C.U. Shah Medical College, Surendranagar

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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 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:** The goal of this study was to review EQAS result from time to time in an effort to improve the performance of the laboratory.

**Methods:** Observational study done at C.U. Shah medical college and hospital, Surendranagar from January 2007 to August 2014. In the current study, our EQAS test results have been evaluated for the past 7 years and 8 months from 2007 to 2014. 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 from AIIMS. The test results of all Indices of 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 thrice. Discrepancy was observed in RBC, MCH and platelet counts. Root cause analysis was performed and necessary action was taken.

**Conclusion:** This participation in EQAS over the last 7 years and 8 months has helped us significantly to improve our laboratory services in terms of performance evaluation, Patient care and overall quality of laboratory practices.

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## 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<sup>[1,2]</sup>. 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<sup>[3,4]</sup>. The organizing laboratory, that conducts such an EQAS periodically, assesses the registered practicing laboratory. Such a registration is not mandatory, but is desirable. To review and assess the quality of laboratory practices, our hematology laboratory services were registered in 2007 under the ISHTM-AIIMS External quality assurance programme (EQAP), hematology department, AIIMS New Delhi. Since 2007, we are participating, and have been receiving samples four times in a year. Here we share our experience of 7 years and 8 months.

## Materials and Methods

**Blood samples:** EQAS blood samples from All India Institute of Medical Sciences (AIIMS), New Delhi were received and processed at Central Diagnostic Laboratories, C.U. Shah Medical College and Hospital, Surendranagar, Gujarat. For each year, every three 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, one 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 Beckman Coulter LH 750 automated cell counter 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 red blood cell morphology and reticulocyte count respectively.

## Result

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

**Table 1: Last eight year EQAS performance**

Year	Results
2007	Unsatisfactory in one cycle
2008	Satisfactory
2009	Unsatisfactory in one cycle
2010	Unsatisfactory in one cycle
2011	Satisfactory
2012	Satisfactory
2013	Satisfactory
2014	Satisfactory

Thrice discordant results were obtained in the RBC, MCH and Platelet counts. All three times, root cause analysis was done to find the cause of discordance and random error was found to be the issue. In these instances, the EQAS results were labelled '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<sup>[5]</sup>. The program provides an opportunity to the participating organizations to compare activities, and modify their own practices, based on what they learn<sup>[6,7]</sup>. In a clinical laboratory service, EQAS evaluates the performance of procedures, equipment, materials and personnel and suggests areas of 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 thrice in the RBC, MCH and Platelets respectively 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 eight years, we could significantly improve our laboratory services in terms of performance evaluation, patient care by giving accurate result of investigation, follow up

and overall quality of laboratory practices. 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.

### **Funding**

Non

### **Competing Interests**

None declared

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