

**RANDOX**

## **EDUCATIONAL GUIDE**

Choosing the right EQA Programme

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QUALITY CONTROL

## Introduction

There are a multitude of External Quality Assessment (EQA) programmes available for laboratories to choose from, all offering a range of features and benefits, but which programme is the right one for your laboratory? In this guide, we delve into the world of EQA schemes, offering insights into what makes a good EQA programme and highlighting key factors to consider when selecting the most suitable scheme for your laboratory. We will explore these factors while shedding light on RIQAS (Randox International Quality Assessment Scheme), the world's largest EQA scheme.

EQA programs play a crucial role in ensuring the accuracy and reliability of laboratory test results. They provide an external quality control mechanism that allows laboratories to assess their proficiency in performing diagnostic tests. By participating in an EQA scheme, laboratories can identify areas for improvement, enhance their analytical performance, and ultimately deliver better patient care.

When considering an EQA scheme, it is important to evaluate several factors that contribute to its effectiveness. In this guide, we will explore these factors, focusing on their significance in the EQA landscape.

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## Why participate in an EQA scheme?

Primarily, it is a requirement for ISO 15189:2022 accreditation. In the recent update to this standard, more emphasis has been placed on participation in a recognised EQA scheme. This aims to improve the accuracy of patient results by enforcing more stringent regulations for laboratories to monitor and validate their proficiency.

The goal of EQA participation is not simply to comply with international standards but to ensure the accuracy of all the results produced by the laboratory.

Internal quality control (IQC) functions to monitor the precision or reproducibility of results, i.e., how closely together results are produced for an identical sample. While IQC has many advantages it does not test the accuracy of results i.e., how close the result is to the true value. This is the role of EQA. By analysing blind samples and comparing the results with the predefined peer group, laboratories can have improved confidence that their results are true and free from bias. This allows laboratories to identify issues early and decide on corrective action.

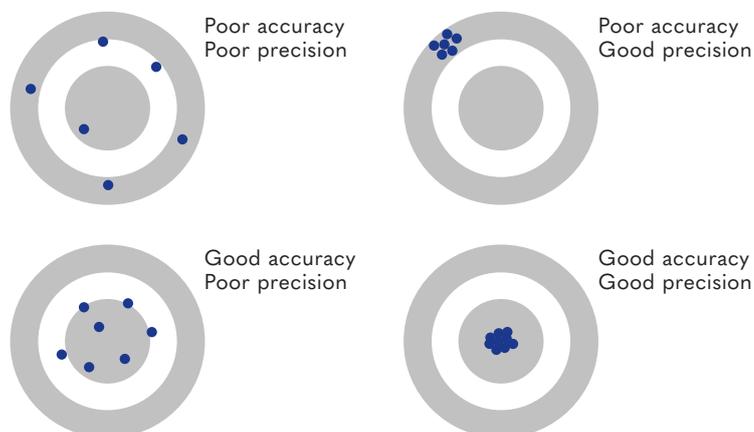


Figure 1. Diagram showing the definitions of accuracy and precision.

## What to consider when choosing an EQA programme

### Analyte Coverage

One of the primary considerations when evaluating an EQA scheme is the comprehensiveness of analyte coverage. Laboratories perform a wide range of tests, and it is crucial to select an EQA programme that encompasses the analytes relevant to your laboratory's testing menu. A comprehensive EQA scheme offers an extensive range of analytes, enabling laboratories to assess their performance across various disciplines. This ensures a more comprehensive evaluation of proficiency and provides a broader understanding of the laboratory's capabilities.

### Accreditation

Accreditation is another critical factor to consider when choosing an EQA scheme. Accredited EQA programmes adhere to internationally recognised standards, providing assurance of their quality and integrity. Accreditation ensures that the programme has undergone rigorous assessment and meets the required criteria. Laboratories should consider the accreditation status of an EQA scheme to ensure its adherence to their quality control processes. Accredited programmes provide confidence in the reliability of the EQA results and the programme's overall performance. To be fully compliant with ISO 15189:2022 regulations, laboratories should select an EQA programme that is accredited to ISO/IEC 17043:2010 Conformity assessment – General requirements for the competence of proficiency testing providers.

### Frequency of Reporting

Frequent reporting in an EQA scheme is crucial for timely feedback, allowing laboratories to address performance deviations promptly. Regular reporting cycles enable laboratories to identify any potential issues and take corrective actions swiftly. A scheme that offers frequent reporting enhances the laboratory's ability to continuously improve its performance and deliver high-quality patient results. The more frequent the reporting, the more opportunities laboratories have to assess their proficiency and make necessary adjustments. The graph below shows target deviation data for bi-weekly and monthly reporting. This is calculated based on the % deviation from their peer group over the previous cycle. This data clearly shows that by increasing the frequency of EQA and reviewing your results, with the aim of making process improvements, you can improve analytical accuracy.

TDPA comparison - Bi-weekly v Monthly 2021

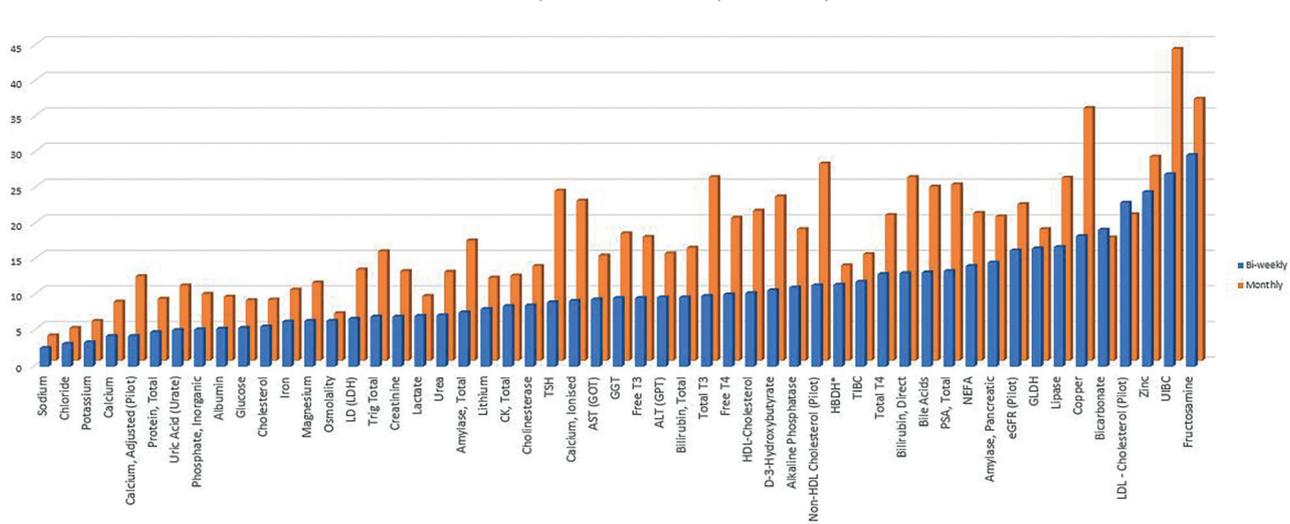


Figure 2. Data range for clinical chemistry analytes comparing Target Deviation for Performance Assessment. Data displays lower deviations for bi-weekly performance assessment when compared with monthly performance assessment, showing the superiority of bi-weekly testing.

## Consolidation

Managing multiple EQA programmes can be administratively burdensome. A consolidated EQA approach allows laboratories to streamline their activities by participating in a lower number of more comprehensive schemes. This consolidation simplifies logistics, reduces administrative workload, and optimizes resource allocation, allowing laboratories to focus on quality improvement and patient care. Consolidated programmes save time and effort by eliminating the need to coordinate multiple schemes, making it easier for laboratories to implement effective EQA processes.

## Flexibility

Flexibility is an important consideration, as laboratories have unique testing requirements. An EQA scheme that offers flexible programme options allows laboratories to select the most relevant modules and analytes for their specific testing menu. This ensures that the EQA programme aligns closely with the laboratory's needs, enhancing its relevance and effectiveness. Flexibility in program options enables laboratories to tailor their participation in the EQA scheme, focusing on areas covered by their test menu.

## Peer Group

Participation and peer group size significantly impact the value of an EQA scheme. A diverse and representative peer group ensures a more accurate assessment of proficiency. Laboratories benefit from benchmarking their results against a larger population, gaining insights into their performance relative to other laboratories worldwide. Large peer groups ensure better coverage for niche instruments/methods, provide a broader perspective, and a more robust assessment of proficiency. However, it is important to consider the characteristics of the peer group, such as geographic diversity and testing capacities, to ensure a well-rounded comparison.

## Instrument Registration

The number of instrument registrations supported by an EQA scheme is another factor to consider. Laboratories often have varied analytical systems and compatibility with their instruments is crucial for accurate proficiency assessment. An EQA scheme that supports a wide range of instrument registrations ensures alignment with the laboratory's existing instrumentation, facilitating accurate proficiency assessment across all platforms. It allows laboratories to assess their performance across different instruments and ensures that the EQA scheme caters to the diverse needs of laboratories with various analytical systems. Additionally, many EQA schemes only allow one instrument per registration. ISO 15189:2022 states,

*“When either different methods or equipment, or both, are used for an examination, and/or the examination is performed at different sites, a procedure for establishing the comparability of results for patient samples throughout the clinically significant intervals shall be specified.”*

Therefore, those EQA schemes which offer the option for multiple instruments under one registration should be considered superior programmes and are best equipped to assist your laboratory achieve ISO15189 accreditation.

## Sample Quality and Commutability

The quality of EQA samples is paramount for accurate performance assessment. EQA schemes that provide high-quality samples contribute to reliable results. These samples are meticulously prepared to mimic patient samples and deliver a realistic testing experience. They should exhibit excellent stability, ensuring reliable results even under challenging transportation conditions. The commutability of EQA samples is also important as it ensures that the samples behave in the same manner as patient samples when tested. Commutability enables laboratories to obtain accurate proficiency assessment data, further enhancing the value of the EQA scheme.

## Concentrations covered within the EQA Scheme

The concentrations covered by a programme is another important factor to consider when selecting an EQA scheme. EQA schemes that offer a wider range of concentrations are considered to be advantageous. By including increased variability of concentrations, laboratories can assess their performance across a broader spectrum and obtain a more comprehensive evaluation of proficiency. The availability of diverse concentrations enables laboratories to accurately measure and monitor their analytical performance across the entire analytical measuring range. This facilitates the identification of potential limitations or deviations in the testing process and allows for targeted improvements. EQA schemes that incorporate a greater variety of concentrations provide laboratories with a more robust and realistic assessment, thereby supporting the delivery of high-quality patient care.

## EQA Reports

User-friendly and clear data presentation are crucial aspects of EQA reports. A user-friendly report is easy to navigate and ensures data interpretation is as simple as possible. Many EQA schemes provide reports which are saturated with data and graphics, most of which are barely relevant to the information required by laboratories. Clear data presentation ensures that laboratories can quickly identify trends and areas of concern. Well-structured tables, charts, and concise explanations facilitate comprehension. Quick report turnaround is essential as it allows laboratories to promptly assess their performance, compare results, and take necessary corrective actions. Timely feedback enables laboratories to track progress, monitor the effectiveness of improvements, and enhance overall proficiency. Prioritising user-friendliness, clear data presentation, and quick report availability maximizes the value of EQA reports in driving analytical performance improvements.



## Randox International Quality Assessment Scheme

RIQAS is the world's largest EQA scheme boasting more than 65,000 laboratory participants spanning over 135 countries. With a flexible portfolio of 36 highly consolidated programmes, RIQAS can offer a variety of options to cover your entire test menu. The table below details how RIQAS can meet the key considerations related to choosing an EQA scheme:

FEATURE	RIQAS
Cost Effective	<p>Our extensive range of multi-analyte programmes will reduce the number of individual programmes required to cover your test menu, saving both time and money. Reduced parameter options for selected programmes offer greater flexibility, ensuring suitability for laboratories of all sizes and budgets.</p> <p>Register up to five instruments per programme (volume permitting) at no extra cost for comparative performance assessment.</p>
Participation	<p>RIQAS boasts the world's largest participation with 65,000 laboratory participants across 135 countries. A high level of participation means peer group numbers are maximised whilst ensuring the availability of data for a wide range of instruments and methods.</p>
Frequency of reporting	<p>Frequent reporting allows early identification of system errors and implementation of any necessary corrective actions with minimum disruption to the lab. With a turnaround of less than 72 hours for most reports, corrective action can be implemented earlier, potentially reducing costly errors with patient results.</p>
User-friendly reports	<p>A simple, one-page per parameter format, enables at-a-glance performance assessment, saving valuable laboratory time.</p> <p>Complimentary multi-instrument and interlaboratory reports allow comparative performance assessment of all laboratory systems and multiple connected laboratories.</p> <p>End-of-Cycle reports, summarising performance compared to the previous cycle, allow you to identify improvements in quality over time.</p>
Cloud-based reporting	<p>RIQAS.net is a convenient, web-based data entry system which allows participants to return results and view reports online.</p>
Accreditation	<p>RIQAS provides certificates as proof of EQA participation and performance for laboratory accreditation purposes.</p> <p>RIQAS is a UKAS accredited Proficiency Testing Provider and is accredited to ISO/IEC 17043:2010, 'Conformity Assessment- General Requirements for Proficiency Testing', highlighting the superior quality and excellence of RIQAS.</p>

## Sample Quality

Samples spanning clinically relevant levels allow the identification of concentration-related biases, helping to ensure accurate instrument performance. Human samples free from interfering preservatives increase confidence that EQA performance mirrors the performance of patient samples. Reference method values are provided in the Clinical Chemistry programme for selected parameters and lots, while for the Immunosuppressant programme, they are provided for all parameters and lots.

### RIQAS Programmes:

- Ammonia/Ethanol
- Anti-Müllerian Hormone (AMH)
- Anti-TSH Receptor
- Blood Gas
- BNP
- Cardiac
- Cardiac Plus
- Cerebrospinal Fluid (CSF)
- Clinical Chemistry
- Coagulation
- CO-Oximetry
- CYFRA 21-1
- Cytokines
- ESR
- Glycated Haemoglobin (HbA1c)
- Haematology
- Human Urine
- Immunoassay
- Immunoassay Speciality 1
- Immunoassay Speciality 2
- Immunosuppressant Drugs
- Lipids
- Maternal Screening
- Microbiology
- Neonatal Bilirubin
- Serology (Anti-SARS-CoV-2)
- Serology Epstein Barr Virus (EBV)
- Serology (HIV/Hepatitis)
- Serology (Syphilis)
- Serology (ToRCH)
- Serum Indices
- Specific Proteins
- Sweat Testing
- Therapeutic Drugs
- Urinalysis
- Urine Toxicology

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## Conclusion

In conclusion, selecting the right EQA scheme requires careful consideration of multiple factors. While we have highlighted the significance of each factor, it is essential to assess these factors in the context of your laboratory's specific requirements. RIQAS addresses these factors effectively, making it a noteworthy option to consider.

Remember, a well-designed EQA scheme with comprehensive analyte coverage, accreditation, appropriate frequency of reporting, programme consolidation, flexibility, participation in large peer groups, support for multiple instrument registrations, and provision of high-quality and commutable samples can significantly contribute to the accuracy and reliability of laboratory test results. We hope that this guide assists you in making an informed decision in selecting an EQA scheme that empowers your laboratory to excel in proficiency and deliver optimal patient outcomes.

For more information on our EQA schemes and their benefits, feel free to reach out to us at [marketing@randox.com](mailto:marketing@randox.com)

or for more information on RIQAS visit:

<https://www.randox.com/riqas-external-quality-assessment/>

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