RANDOX
QUALITY CONTROL

RIQAS

RIQAS Explained

Complete **QC** solutions for results you can **trust**

External Quality Assessment (EQA) is an essential aspect of any laboratory operation. EQA provides a means of assessing the analytical performance of a laboratory compared to other laboratories utilising the same methods and instruments.

Overall Objective of EQA

To develop interlaboratory comparability which allows standardisation of diagnostic testing. EQA measures a laboratory's accuracy using 'blind' samples that are analysed as if they were patient samples. Results are returned to the scheme organiser for statistical analysis. Laboratories receive a report comparing their individual performance against other participants in the programme. EQA has a number of functions:

- Maintaining and improving the analytical quality of laboratory tests
- Improving interlaboratory agreement and raising standards
- Detecting equipment failures, identifying reagent problems, reviewing staff training
- Initiating and evaluating corrective actions
- Comparing different analytical methods

Participation in an EQA scheme will help produce reliable and accurate reporting of patient results. Quality results will reduce time and labour costs, and most importantly provide accurate patient diagnosis and treatment.

RIQAS Support

RIQAS support staff are on hand to offer advice and troubleshoot technical queries.

RIQAS Programmes

- Ammonia/Ethanol
- Anti-TSH Receptor
- Blood Gas
- BNP
- Cardiac
- Cerebrospinal Fluid (CSF)
- Clinical Chemistry
- Coagulation
- CYFRA 21-1
- ESR
- Glycated Haemoglobin (HbA1c)
- Haematology
- Human Urine
- Immunoassay
- Immunoassay Speciality 1
- Immunoassay Speciality 2
- Immunosuppressant
- Lipid
- Liquid Cardiac
- Maternal Screening
- Serology Epstein Barr Virus (EBV)
- Serology (HIV/Hepatitis)
- Serology (Syphilis)
- Serology (ToRCH)
- Specific Proteins
- Sweat Testing
- Therapeutic Drugs
- Trace Elements in Blood
- Trace Elements in Serum
- Trace Elements in Urine
- Urinalysis
- Urine Toxicology

RIQAS is the largest international EQA scheme in the world. It is used by more than 35,000 laboratory participants in 123 countries. 32 programmes are currently available.

Accreditation

RIQAS provides certificates as proof of EQA participation and performance for laboratory accreditation purposes.

RIQAS is a UKAS accredited Proficiency Testing Provider, No. 0010, and is accredited to ISO/IEC 17043:2010, 'Conformity Assessment-General Requirements for Proficiency Testing'.

Accreditation to ISO/IEC 17043:2010 highlights the superior quality and excellence of RIQAS.

UK Performance Surveillance

- Recognised by the UK National Quality Assurance Advisory Panel (NQAAP) for Clinical Pathology
- Recognised by the Joint Working Group on Quality Assurance (JWG QA)

Independent Advisory Panel

RIQAS participants have access to an independent advisory panel consisting of scientific and clinical experts. This ensures professional and ethical conduct of the scheme and participant confidentiality.

RIQAS Facts

A good EQA scheme should have:

- Sufficient number of participants
- Effective consolidation of programmes
- International recognition through accreditation
- High quality material
- Regular reports with rapid turnaround times
- Independent advisory panel
- Flexible programme choices

Features and Benefits

RIQAS samples are custom-manufactured to be both stable and similar to human samples.

- A high level of participation ensures a **large database** of results and analytical methods, therefore increasing statistical validity.
- Programmes accepted by National and International **accreditation** bodies worldwide.
- Human samples **free from interfering preservatives** increase confidence that EQA performance mirrors the performance of patient samples.
- **Optimised shipping** of samples for each cycle.
- **Wide range** of parameters covering a broad spectrum of laboratory testing allowing for programme consolidation.
- Regular reports with **rapid turnaround,** ensuring corrective actions can be taken prior to analysis of subsequent samples.
- User-friendly reports, **easy to read** at-a-glance, saving valuable laboratory time.
- Reduced parameter options for selected programmes offer **greater flexibility**, ensuring suitability for laboratories of all sizes and budgets.
- **Participant certificates** provide evidence of participation in a reputable EQA scheme.
- **Multi-instrument reports** allow assessment of performance of all systems in the laboratory.
- **Interlaboratory group** reports allow comparison of multiple connected laboratories.
- **Reference method** values are provided in the Clinical Chemistry programme for selected parameters and lots.
- Samples spanning **clinically relevant levels**, allows identification of concentration related biases and ensures accurate instrument performance.

RIQAS reports are presented in a user-friendly, one page per parameter format. This allows easy interpretation of your analytical performance.

RIQAS Reports

- Statistical breakdown by all methods, your method and, where applicable, your instrument including running means for the last 10 samples.
- Compare your instrument group, method group and all methods using the histogram.
- Identify trends, biases and precision problems using the visual charts.
- The Target Score chart grades your performance in a moving window over the last 20 samples, including the previous cycle.
- At-a-glance summary page for all parameters in the programme.
- Compare your result with statistically robust consensus means.
- Identify acceptable and poor performance using fit-for-purpose performance indicators:
  - SDI
  - %Deviation
  - Target Score

Multi-Instrument Reports

Laboratories can register up to five instruments at no extra cost. Individual reports for each instrument plus a unique multi-instrument report are provided.

The multi-instrument report allows the comparative performance of each instrument. Additional sample packs may be ordered as required.

RIQAS Facts

Interlaboratory Group Reports:

The Group Reporting facility enables laboratory groups to monitor satellite sites. Laboratories can receive individual reports with the group supervisor receiving a report comparing the laboratories within the group. This allows easy assessment of performance of all laboratories within a group.

PDF Reporting

RIQAS reports can now be presented in PDF (portable document format), offering easy review and storage of your laboratory's EQA data.

There are many advantages associated with PDF reporting, increasing the usability and efficiency of data analysis.

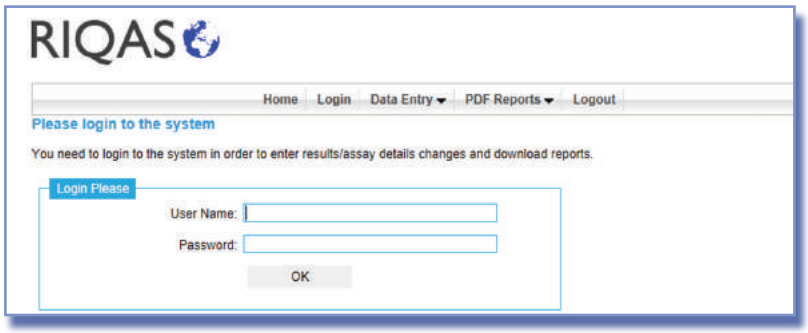
Summary CSV files

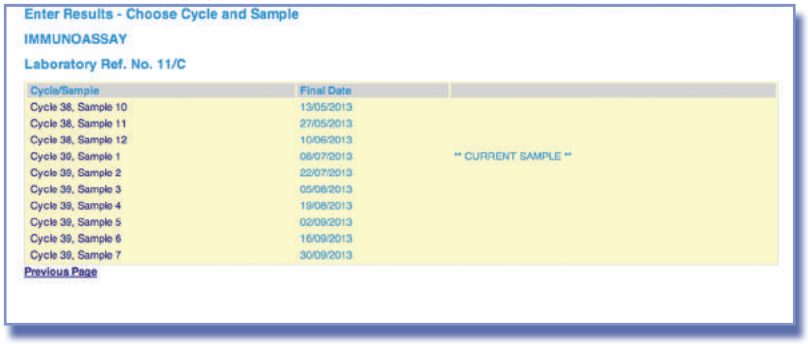
It is possible to receive an additional summary of your report statistics, acceptable limits and performance indicators as a .csv file for every sample.

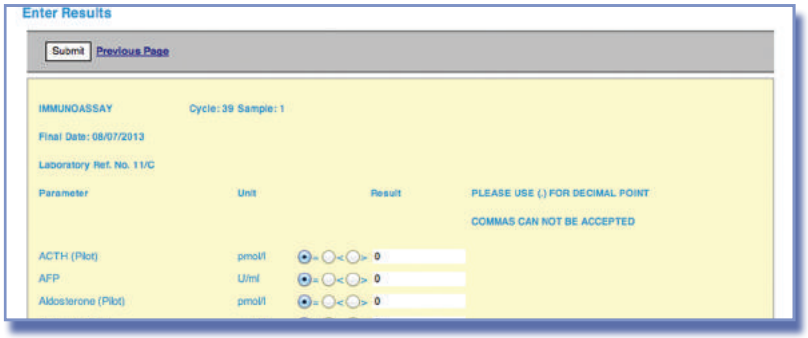
A retrospective statistics summary is also available four weeks after the final date, for parameters where a result has not been submitted on time.

Web-Based Data Transfer

RIQAS.Net offers easy, direct access for the submission of results and retrieval of reports direct from the RIQAS host server.



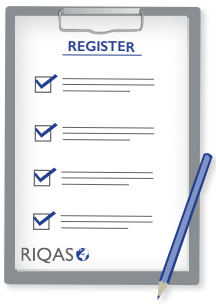




- Available in multiple languages.
- Confidentiality and security is maintained through the use of password protected access.
- Submit current, corrected and future results (normal policies apply), directly into the RIQAS database. Receipt of results is confirmed by e-mail.
- Multi-lingual registration identifier provides simple identification of multiple registrations.
- Additions and changes to assay details can be made quickly and easily online.
- Requests for new method, instrument and reagent codes can be made online.
- Reports are emailed in PDF format as soon as they are prepared.
- Reports for the previous two cycles can be downloaded from the website.
- View, print, store or distribute reports as you wish.
- Update your laboratory's certificate of participation details in multiple languages.
- All that is required is web access, Adobe Reader (for viewing reports) and a valid password to access the system.
- No additional software required.

Participation in RIQAS follows these simple steps:

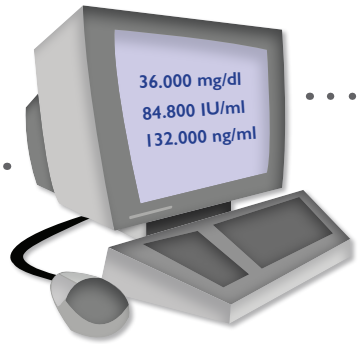
1 Participant registers the instruments and methods used in their lab by completing the enrolment document. Enrolment documents are available from riqas.com and should be submitted 3 weeks before the cycle starts. Check RIQAS policies in method questionnaire.



2 Participant receives a set of numbered samples along with a username/ password to access RIQAS.Net.

3 Participant analyses the sample on the recommended date, carefully following the instructions for use.

4 Participant enters their results via RIQAS.Net or on the return sheet and submits electronically, by fax or post before the final deadline.

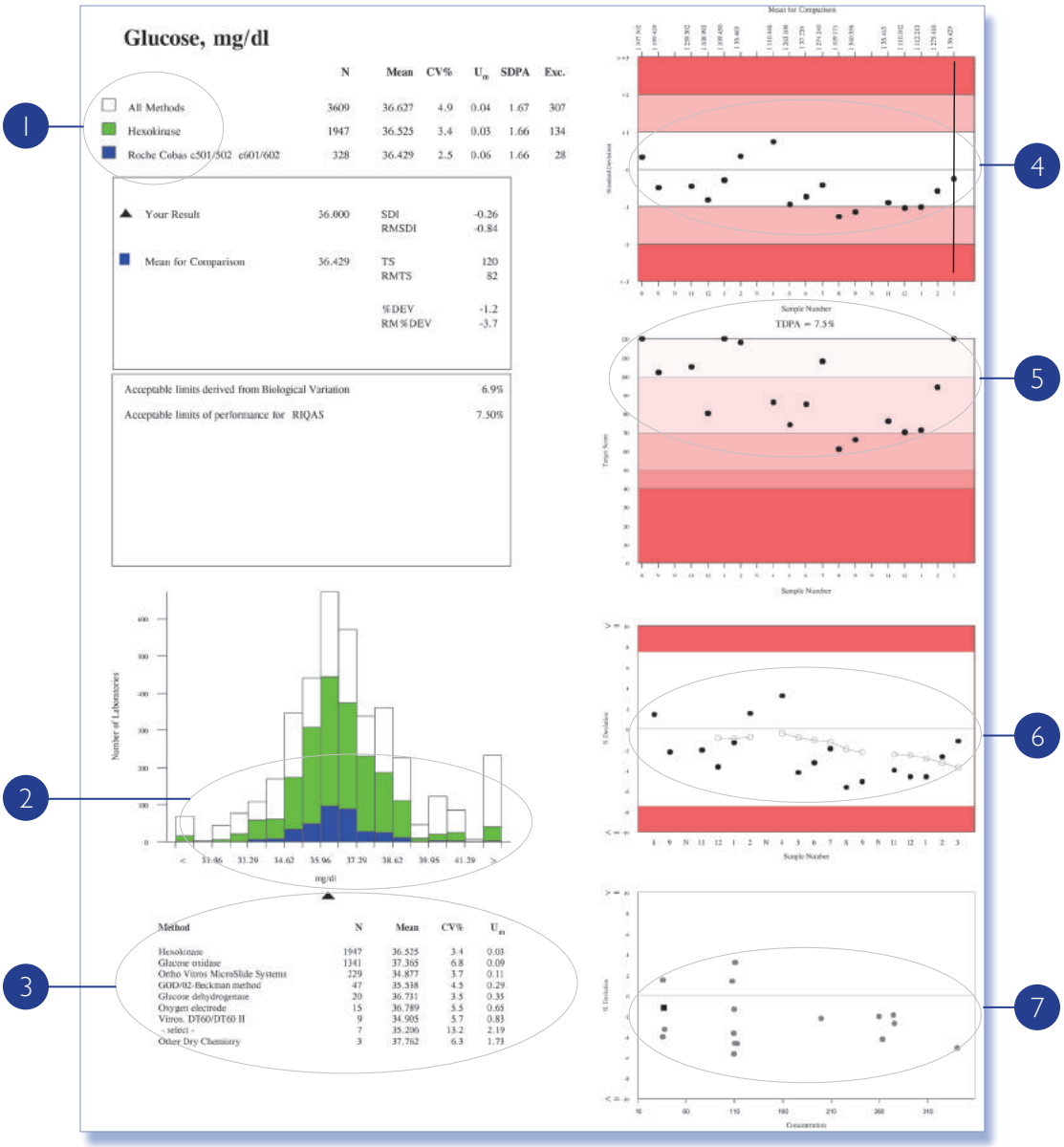


5 Participant receives report by email or post and reviews to assess performance.

6 Participant receives an end-of-cycle report, a certificate of acceptable performance and a certificate of participation at the end of the cycle, provided that more than half results are returned.

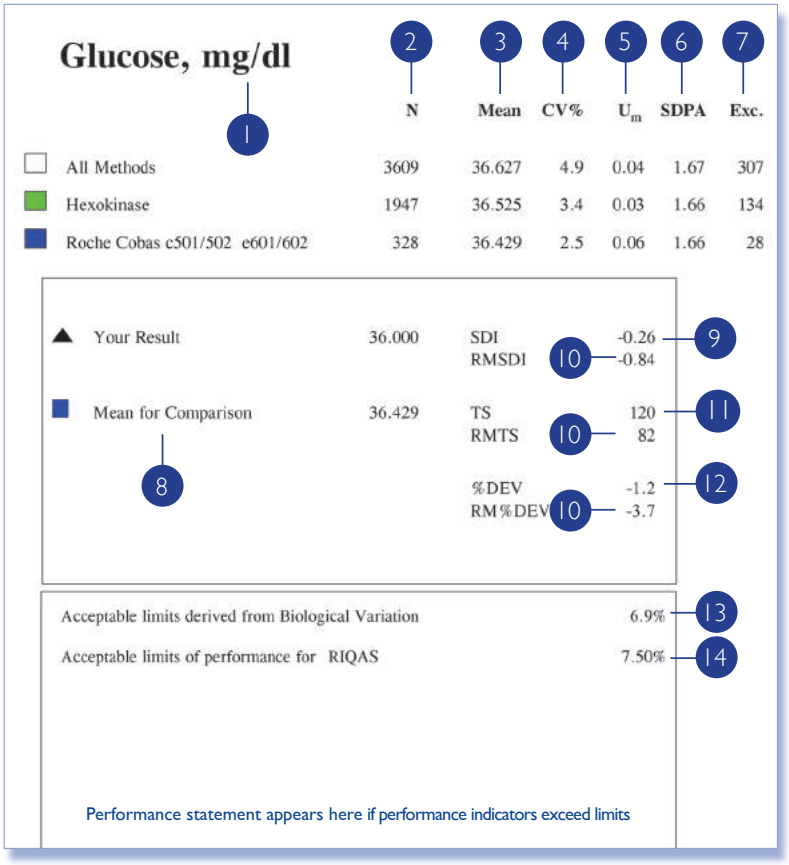
7 Method changes and registration of additional parameters can be submitted via RIQAS.Net.

Performance data is presented in a one page format with up to seven sub-reports.



1	**Text Section:**	Statistics for all methods, your method and instrument group (programme specific).
2	**Histogram:**	Method and instrument comparison.
3	**Multi-Method Stat Section:**	Enables assessment of the performance of each method.
4	**Levey-Jennings Chart:**	Details features of your laboratory's performance.
5	**Target Score:**	This unique chart provides a numerical index of performance, allowing at-a-glance assessment.
6	**%Deviation by Sample:**	Helps to identify trends and shifts in performance.
7	**%Deviation by Concentration:**	Rapid assessment of concentration related biases.

The text section summarises the statistical information for each parameter.



Glucose, mg/dl (1)

	N (2)	Mean (3)	CV% (4)	U_m (5)	SDPA (6)	Exc. (7)
All Methods	3609	36.627	4.9	0.04	1.67	307
Hexokinase	1947	36.525	3.4	0.03	1.66	134
Roche Cobas c501/502 e601/602	328	36.429	2.5	0.06	1.66	28

Your Result	36.000	SDI	-0.26 (9)	
		RMSDI (10)	-0.84	
Mean for Comparison (8)	36.429	TS	120 (11)	
		RMTS (10)	82	
		%DEV	-1.2 (12)	
		RM%DEV (10)	-3.7	

Acceptable limits derived from Biological Variation	6.9% (13)
Acceptable limits of performance for RIQAS	7.50% (14)

Performance statement appears here if performance indicators exceed limits

RIQAS performance indicators include SDI, Target Score and %Deviation.

Acceptable performance criteria:

SDI < 2
Target score > 50
%Deviation < defined acceptable limits

1. Report is presented in your chosen unit.
2. Number of returned results used to generate Mean for Comparison.
3. Average value of all laboratories' results.
4. Coefficient of Variation.
5. Uncertainty associated with the Mean for Comparison.

$$U_m = \frac{1.25 \times SD}{\sqrt{n}}$$

6. SDPA = Standard Deviation for Performance Assessment, calculated from the Target Deviation for Performance Assessment (TDPA) and the Mean for Comparison.

$$SDPA = \frac{TDPA \times \text{Mean for Comparison}}{\text{t-value} \times 100}$$

t-value = factor which represents the % of poor performers reflected in the TDPA (t-value ~ 1.645 when ~10% laboratories achieve poor performance) SDPA is combined with U_m, where appropriate.

If $U_m > (0.3 \times SDPA)$ then $SDPA_{adjusted} = \sqrt{(U_m^2 + SDPA^2)}$ and the reported value is suffixed with "a"

If U_m is less than $(0.3 \times SDPA)$ then $SDPA_{adjusted} = SDPA$

7. After statistical reduction, some results are excluded.
8. Ideally this will be your instrument group mean. If N<5 for instrument group, your method group Mean is selected as Mean for Comparison.
9. Standard Deviation Index = $\frac{\text{Your Result - Mean for Comparison}}{SDPA_{adjusted}}$
10. Running Mean average of the last 10 performance indicators is used to monitor performance over time and concentration range.
11. Target Score - The closer a value is to 120, the better the performance.
12. %Deviation from the Mean for Comparison - the closer the value is to zero, the better the performance.
13. Biological Variation stated for information purposes only.
14. Performance limit set for this parameter.

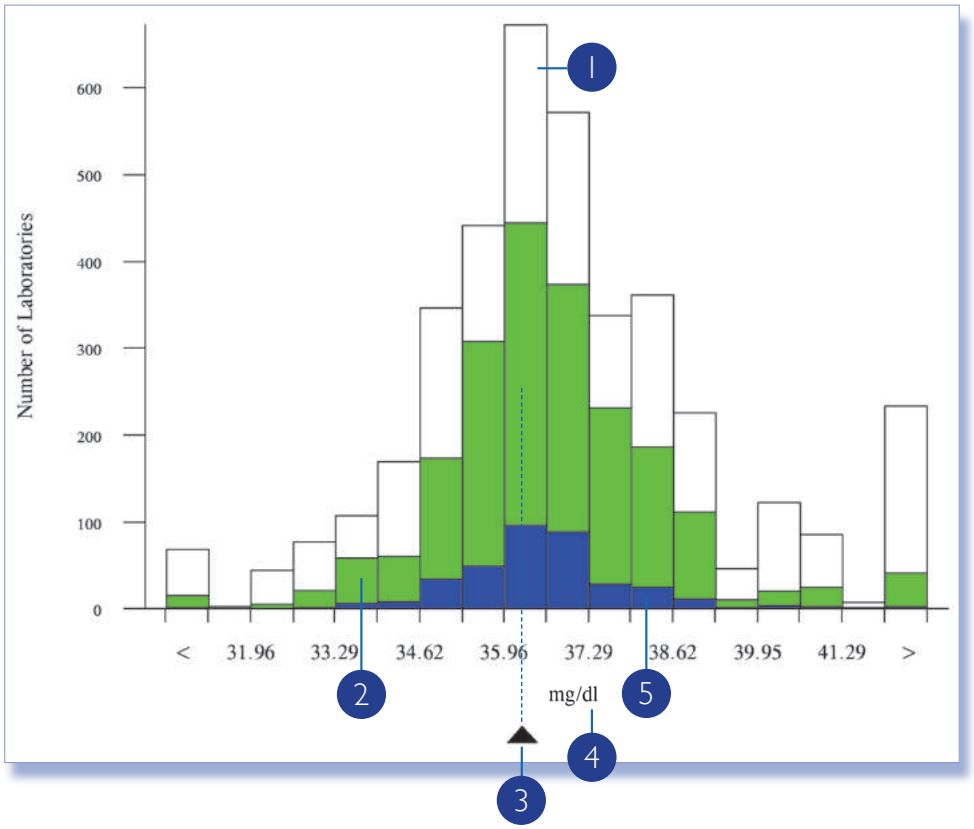
Histogram

The Bar Graph is intended as a quick visualisation of how your lab's result compares to the method mean, instrument mean and all method mean.

All methods

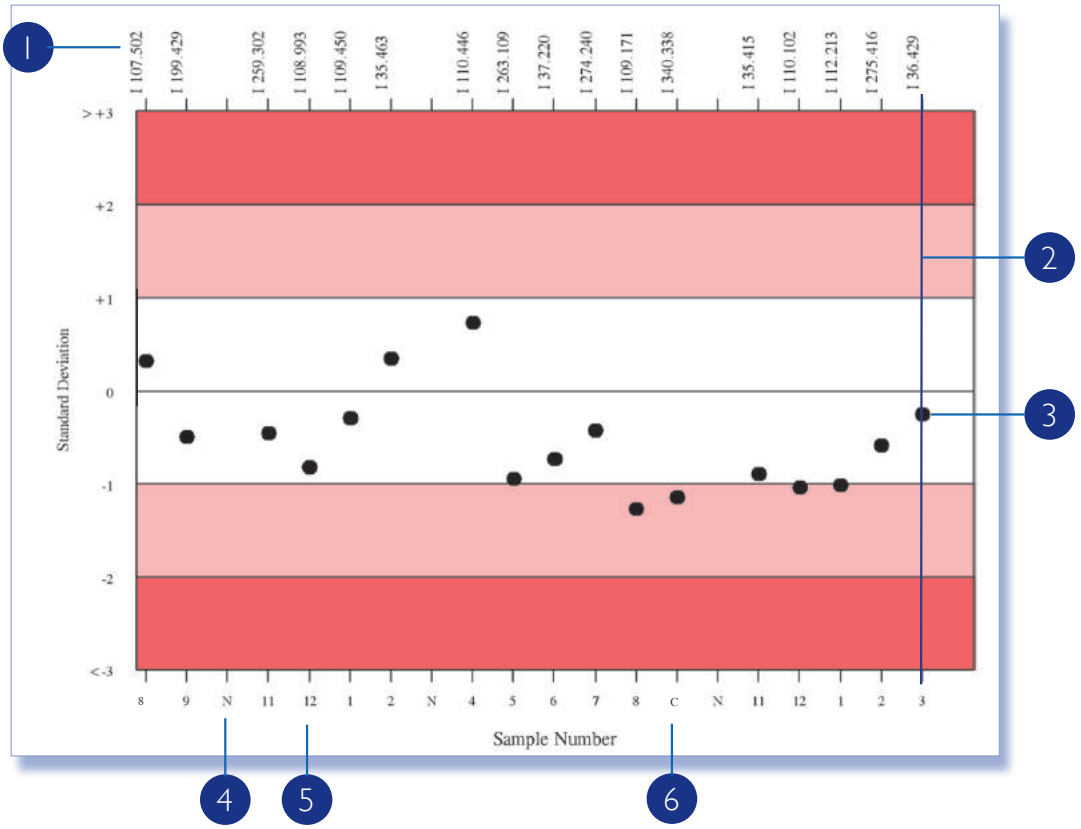
Your method group

Your instrument group (programme specific)



1. Total of 673 laboratories reported values between 35.96 and 36.63.
2. 58 laboratories reported values between 33.29 and 33.96 in your method group.
3. Your Result.
4. RIQAS reports show your unit of measurement.
5. 25 laboratories reported values between 37.96 and 38.62 in your instrument group.

SDIs reflect laboratory performance in relation to fit-for-purpose SDPAs and are useful to monitor performance over time. Acceptable performance is SDI < 2.



1 Where a result has been returned, the Mean for Comparison for each sample is indicated at the top of the chart, allowing easy assessment of concentration related bias:

I:	Instrument mean
M:	Method mean
A:	All method mean

2 This line indicates a change in registration details for this parameter.

3 Your SDI (Standard Deviation Index).

4 N = No result returned from your laboratory. No statistics are shown.

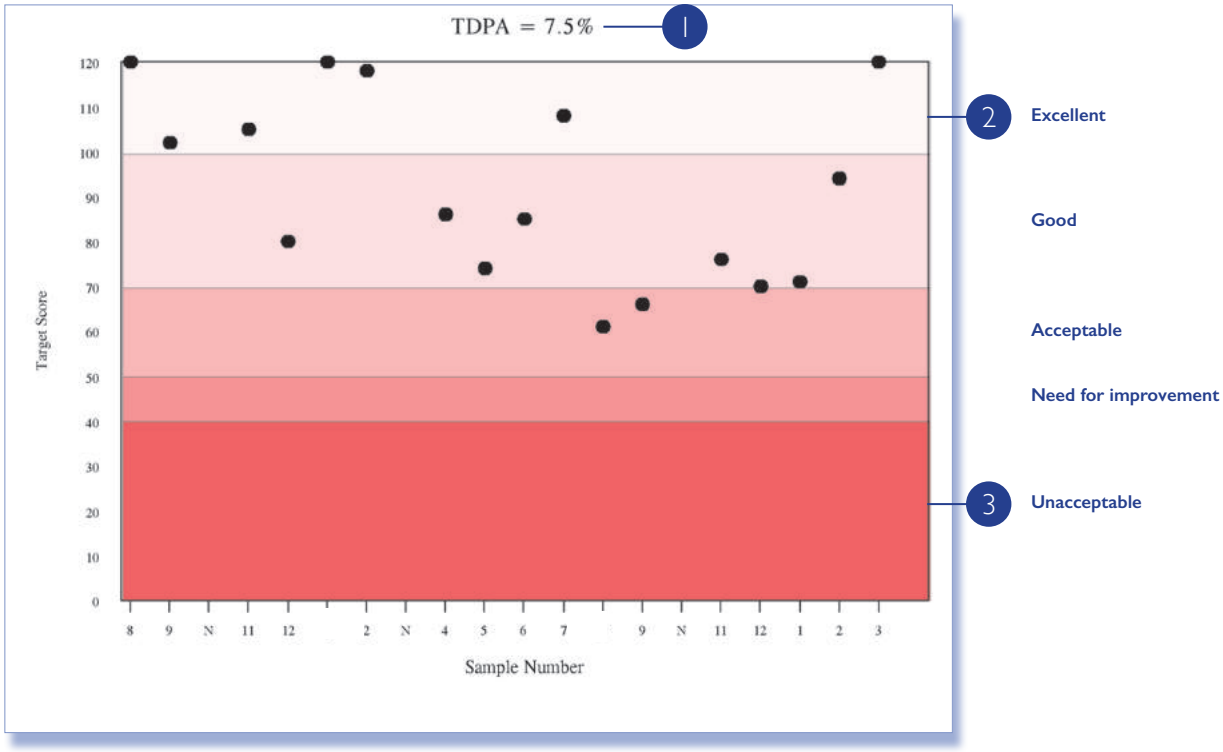
5 Sample number.

6 C = Corrected results will be accepted for non-analytical errors. Corrected results will be accepted up to 4 weeks after the final date deadline, on application, with evidence of analysis. Late results are only accepted if there has been a Randox error.

R = Incorrect results can be removed retrospectively on request.

Target Score Chart

The Target Score (TS) allows participants to assess their performance at a glance. The TS relates the %Deviation of your result from the Mean to a Target Deviation for Performance Assessment (TDPA). TDPAs are set to encourage participants to achieve and maintain acceptable performance. TDPAs are fit-for-purpose performance criteria which are set taking guidance from ISO/IEC17043, ISO13528 and IUPAC. Target Deviations for Performance Assessment are also used to calculate the Standard Deviation for Performance Assessment (SDPA).



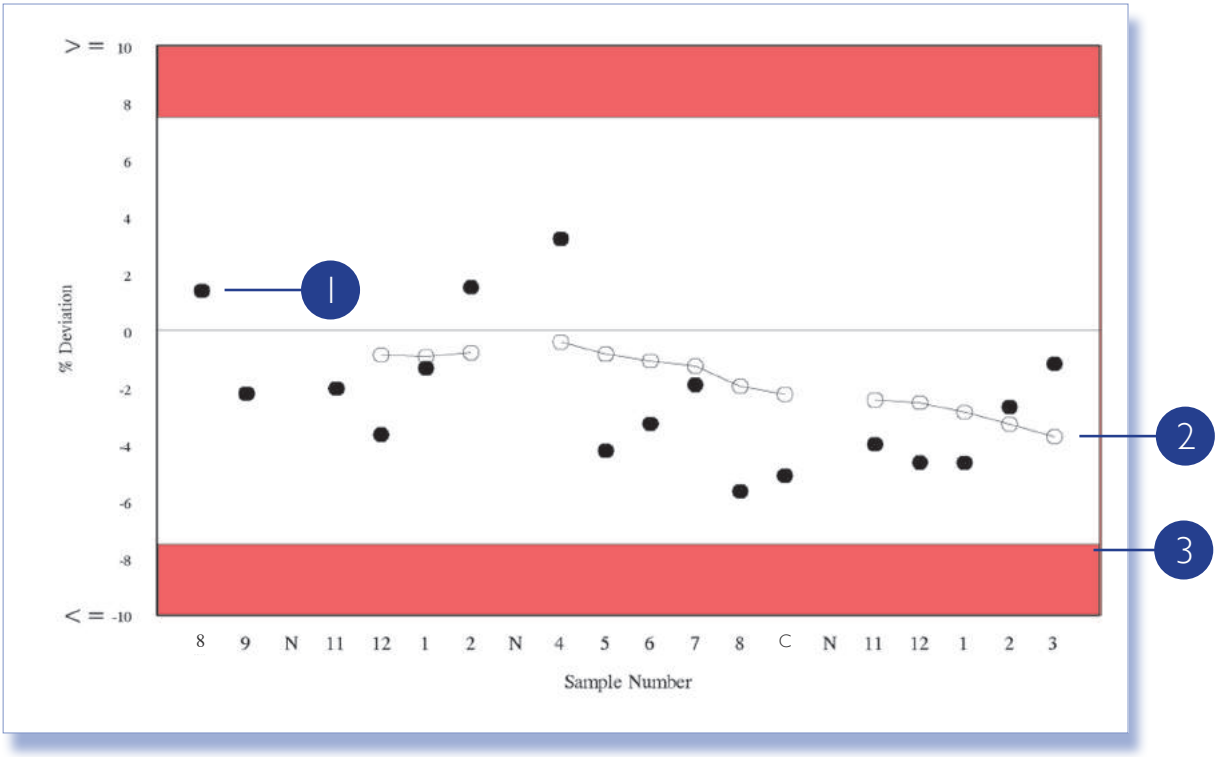
1 This is the upper deviation limit of performance for this parameter. TDPAs are reviewed regularly and deemed fit for purpose by the RIQAS Advisory Panel.

2 High score >50 in the lighter shaded area represents acceptable, good or excellent performance.

3 Heavy shading for values 10 to 50 signifies poor performance.

This chart helps to identify trends and shifts in performance.

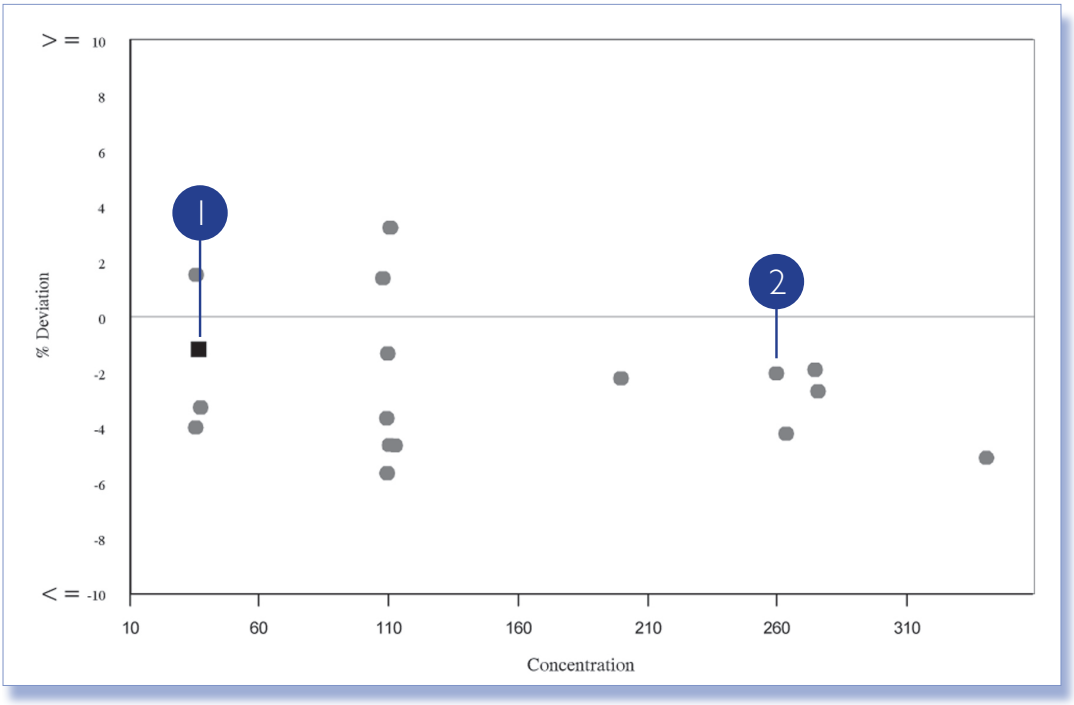
$$\%\text{Deviation} = \frac{\text{Your Result - Consensus Mean}}{\text{Consensus Mean}} \times 100\%$$



1. %Deviation from Mean for Comparison.
2. Plot of Running Mean %Deviations (average of the last 10 %Deviations for the sample indicated).
3. Acceptable limits of performance. These are defaulted to RIQAS TDPAs but can be set to e.g. biological variation or regulatory requirement on request.

%Deviation by Concentration Chart

This chart enables rapid assessment of concentration related biases. Biases at low or high concentrations can be easily determined.



1 Current sample indicated by square.

2 %Deviation at specific concentration.

This section provides an easy way of assessing the performance of other methods used to analyse the parameter in question.

Method	N	Mean	CV%	U_m
Hexokinase	1947	36.525	3.4	0.03
Glucose oxidase	1341	37.365	6.8	0.09
Ortho Vitros MicroSlide Systems	229	34.877	3.7	0.11
GOD/02-Beckman method	47	35.538	4.5	0.29
Glucose dehydrogenase	20	36.731	3.5	0.35
Oxygen electrode	15	36.789	5.5	0.65
Vitros, DT60/DT60 II	9	34.905	5.7	0.83

Summary Page

Located at the back of the RIQAS Report, the Summary Page collates the key information, allowing participants to review the performance of all parameters at-a-glance.

Analyte	Mean for Comparison	Your Result	SDI	RMSDI	%DEV	RM%DEV	TS	RMTS	Performance
Albumin	2.120	2.230	1.00	0.37	5.2	2.0	72	107	
Alkaline Phosphatase	17.705	19.000	0.61	-0.27	7.3	-2.9	93	105	
ALT (GPT)	12.387	12.000	-0.33	-0.47	-3.1	-3.8	119	103	
Amylase, Total	20.454	22.000	0.72	-0.29	7.6	-2.5	86	103	
AST (GOT)	11.976	11.000	-0.86	-0.03	-8.2	-0.4	78	100	
Bicarbonate	8.203	6.900	-1.48	0.15	-15.9	1.5	54	98	
Bilirubin, Direct	0.251	0.380	***2.57***	2.64	***51.3***	47.2	***31***	29	▲
Bilirubin, Total	0.701	0.640	-0.91	-0.29	-8.8	-2.9	76	101	
Calcium	6.074	6.020	-0.19	-0.40	-0.9	-1.8	120	92	
Chloride	76.353	77.000	0.30	-0.28	0.8	-0.8	120	98	
Cholesterol	112.696	110.000	-0.55	0.05	***2.4***	0.2	97	115	
CK, Total	111.659	111.000	-0.08	0.35	-0.6	2.5	120	107	
Creatinine	0.607	0.620	0.27	0.06	2.1	0.5	120	117	
Glucose	36.429	36.000	-0.26	-0.84	-1.2	-3.7	120	82	
HDL-Cholesterol	98.836	102.000	0.21	-0.04	3.2	-0.4	120	113	
Iron	97.374	99.000	0.28	0.01	1.7	0.1	120	114	
Lactate (Pilot)		No Result		Too Few		Too Few	N/A	N/A	
LD (LDH)	85.894	87.000	0.11	-0.70	1.3	-6.3	120	89	
Magnesium	1.313	1.390	0.79	-0.07	5.8	-0.5	82	107	
Phosphate, Inorganic	1.451	1.540	1.02	0.02	6.1	0.1	71	112	
Potassium	1.770	1.840	1.10	-0.25	3.9	-0.7	67	99	
Protein, Total	3.850	3.830	-0.11	0.07	-0.5	0.3	120	114	
Sodium	112.537	114.000	0.58	-0.01	1.3	-0.0	95	104	
TIBC	133.143	133.000	-0.01	-0.01	-0.1	-0.1	120	117	
Trig Total	23.626	24.000	0.18	-0.09	1.6	-0.6	120	114	
Urea	5.872	5.000	***-2.02***	-0.57	***-14.9***	-4.0	***41***	95	▲
Uric Acid (Urate)	3.135	3.100	-0.20	-0.44	-1.1	-2.4	120	107	
				ORMSDI -0.05		**ORM%DEV 0.8**		**ORMTS 102**	

1. RMSDI - is the Running Mean of the 10 previous SDIs (if fewer than 10 results on file, "Too Few" is printed).
2. Red triangle appears when all performance indicators (SDI, %DEV and TS) exceed acceptable performance, i.e: when
   - SDI > 2
   - TS < 50
   - %DEV > acceptable limits set
3. RM %DEV - Average of the last 10 %DEV for this parameter.
4. RMTS - Average of the last 10 Target Scores for this parameter.
5. Overall RMSDI = average RMSDI for this sample distribution.
6. Overall RM%DEV = average RM%DEV for this sample distribution.
7. Overall RMTS = average RMTS for this sample distribution.

Laboratory performance is presented in both quantitative and qualitative screening formats, allowing for easy interpretation at-a-glance.

Screening Section

Quantitative Section

Cannabinoids Group, ng/ml

Your Result Positive

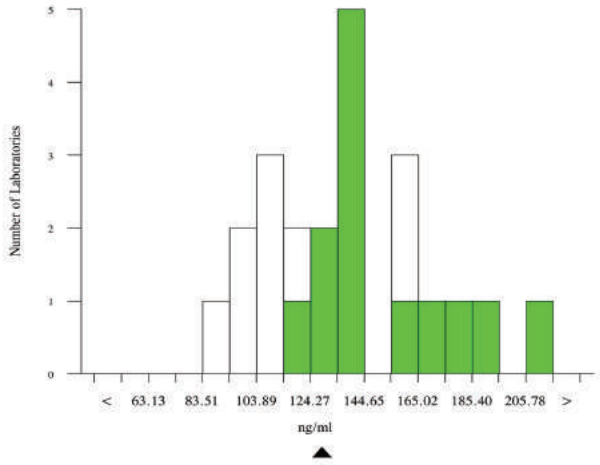
Based on weighed-in value of 125
and your chosen cut-off value of 50
the correct response was Positive

THC	125	ng/ml
Phenobarbital	600	ng/ml
Oxazepam	250	ng/ml
Benzoylecgonine	500	ng/ml
Ethanol	20	ng/ml
Free Morphine	1500	ng/ml
Phencyclidine	25	ng/ml

	Cut-off	TN	TP	FN	FP	RC	NT	Total
Your Result	**50**	**0**	**1**	**0**	**0**	**0**	**0**	**1**
FPIA	25	0	3	0	0	0	0	3
	50	**0**	**11**	**1**	**0**	**0**	**0**	**12**
	All	0	14	1	0	0	0	15
All Methods	20	0	2	0	0	0	0	2
	25	0	3	0	0	0	0	3
	30	0	1	0	0	0	0	1
	50	**0**	**54**	**17**	**0**	**2**	**1**	**74**
	65	0	1	0	0	0	0	1
	100	0	3	0	0	0	0	3
	145	0	0	0	1	0	0	1
	All	0	64	17	1	2	1	85
Competitive Antibody Binding	**50**	**0**	**7**	**2**	**0**	**0**	**0**	**9**
CEDIA	**50**	**0**	**1**	**0**	**0**	**0**	**0**	**1**
DRI-EIA	**50**	**0**	**4**	**0**	**0**	**0**	**0**	**4**
EMIT	**50**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
EMIT II+	**50**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
KIMS	**50**	**0**	**4**	**0**	**0**	**0**	**0**	**4**
Point of Care	**50**	**0**	**22**	**12**	**0**	**2**	**0**	**36**
Randox Biochip Array Technology	**50**	**0**	**1**	**0**	**0**	**0**	**0**	**1**
Biosite Triage	**50**	**0**	**0**	**2**	**0**	**0**	**1**	**3**

	N	Mean	SD	CV%	exc.
All Methods	22	134.462	27.17	20.2	1
FPIA	13	145.993	22.02	15.1	1

Your Result	132.000	SDI	-0.64
		RMSDI	Too Few
Mean for Comparison	145.993		



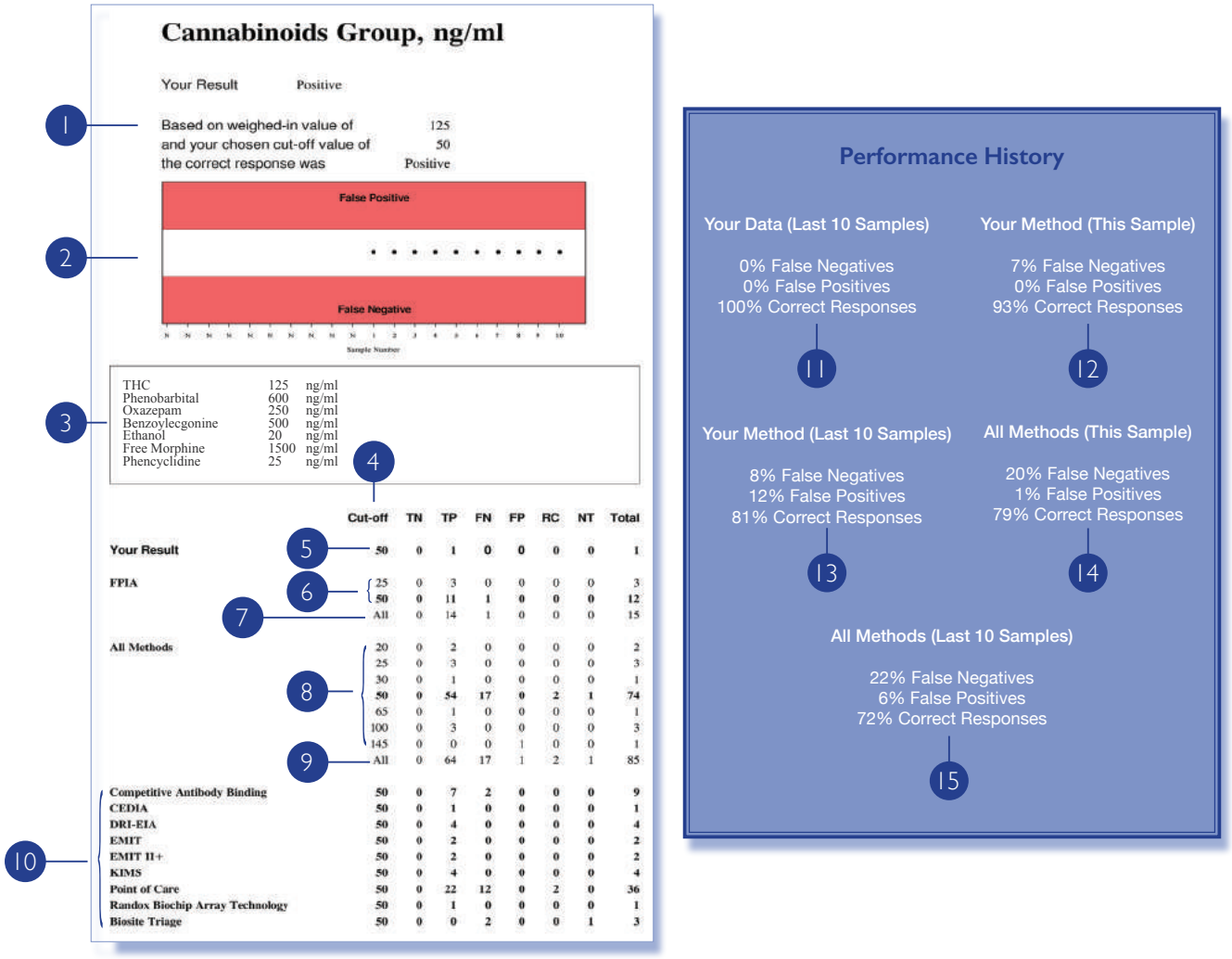
Method	N	Mean	SD	CV%
FPIA	13	145.993	22.02	15.1
Competitive Antibody Binding	2	136.900	35.50	25.9
GC/MS	2	119.000	7.07	5.9
KIMS	2	104.000	5.66	5.4

Performance History

Your Data (Last 10 Samples)	Your Method (This Sample)	Your Method (Last 10 Samples)	All Methods (This Sample)	All Method (Last 10 Samples)
0 % False Negatives	7 % False Negatives	8 % False Negatives	20 % False Negatives	22 % False Negatives
0 % False Positives	0 % False Positives	12 % False Positives	1 % False Positives	6 % False Positives
100 % Correct Responses	93 % Correct Responses	81 % Correct Responses	79 % Correct Responses	72 % Correct Responses

Urine Toxicology Report
Screening Section

Qualitative comparison of screening results available for each parameter.



Cannabinoids Group, ng/ml

Your Result Positive

Based on weighed-in value of 125
and your chosen cut-off value of 50
the correct response was Positive

False Positive

False Negative

Sample Number

THC	125	ng/ml
Phenobarbital	600	ng/ml
Oxazepam	250	ng/ml
Benzoylecgonine	500	ng/ml
Ethanol	20	ng/ml
Free Morphine	1500	ng/ml
Phencyclidine	25	ng/ml

Cut-off	TN	TP	FN	FP	RC	NT	Total
Your Result	**50**	0	1	0	0	0	0	1
FPIA	25	0	3	0	0	0	0	3
	50	0	11	1	0	0	0	12
	All	0	14	1	0	0	0	15
All Methods	20	0	2	0	0	0	0	2
	25	0	3	0	0	0	0	3
	30	0	1	0	0	0	0	1
	50	0	54	17	0	2	1	74
	65	0	1	0	0	0	0	1
	100	0	3	0	0	0	0	3
	145	0	0	0	1	0	0	1
	All	0	64	17	1	2	1	85
Competitive Antibody Binding	**50**	0	7	2	0	0	0	9
CEDIA	**50**	0	1	0	0	0	0	1
DRI-EIA	**50**	0	4	0	0	0	0	4
EMIT	**50**	0	2	0	0	0	0	2
EMIT II+	**50**	0	2	0	0	0	0	2
KIMS	**50**	0	4	0	0	0	0	4
Point of Care	**50**	0	22	12	0	2	0	36
Randox Biochip Array Technology	**50**	0	1	0	0	0	0	1
Biosite Triage	**50**	0	0	2	0	0	1	3

Performance History

Your Data (Last 10 Samples)
0% False Negatives
0% False Positives
100% Correct Responses

Your Method (This Sample)
7% False Negatives
0% False Positives
93% Correct Responses

Your Method (Last 10 Samples)
8% False Negatives
12% False Positives
81% Correct Responses

All Methods (This Sample)
20% False Negatives
1% False Positives
79% Correct Responses

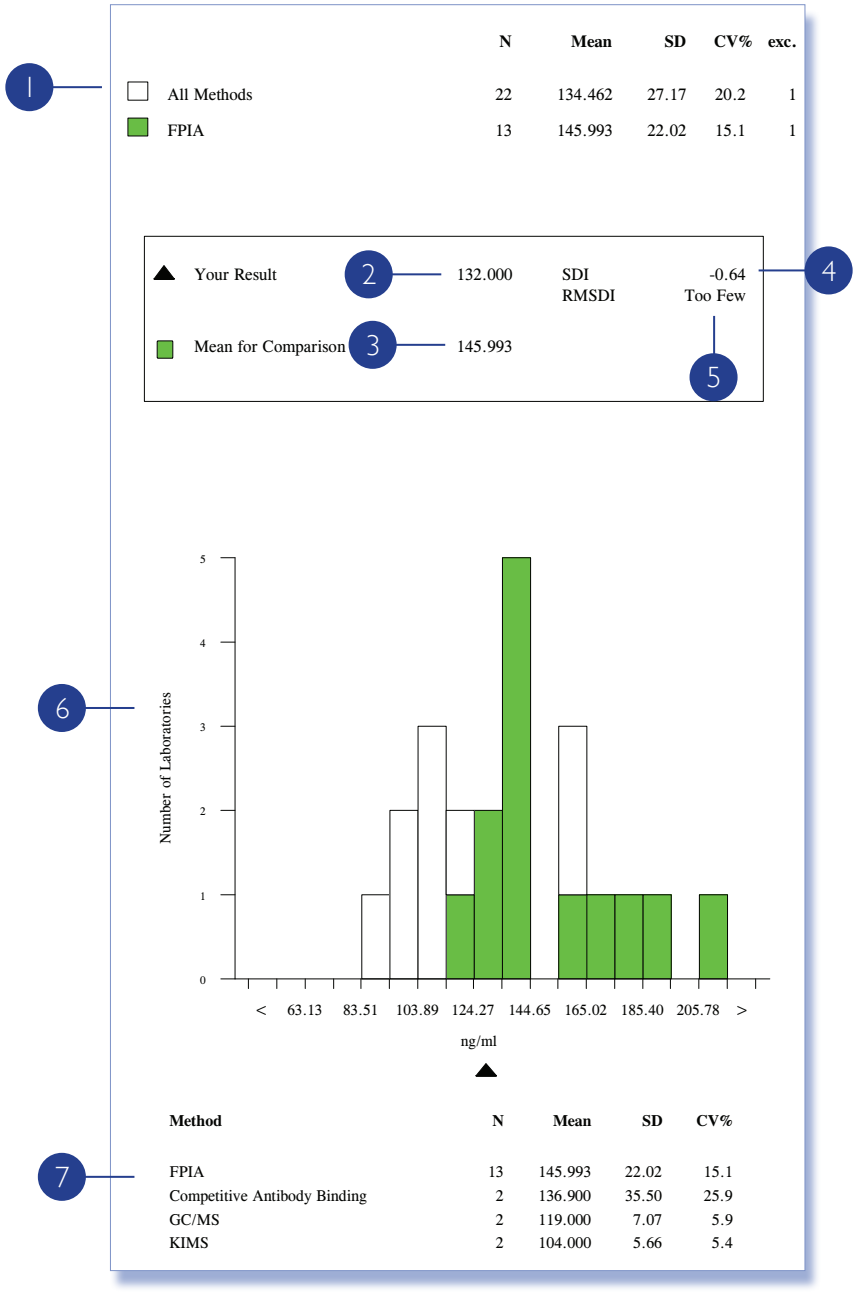
All Methods (Last 10 Samples)
22% False Negatives
6% False Positives
72% Correct Responses

1. Screening Text Section.
2. **Screening Results:** This chart is a quick visualisation of your performance over the last 20 samples. A result in the white section indicates a correct response. A result in the upper red section indicates a False Positive response, and a result in the lower red section indicates a False Negative response.
3. Comment section for RIQAS to provide your laboratory with additional relevant information regarding this sample, such as spiked metabolite concentration.
4. Screening result response categories. All abbreviations indicated at the bottom of the report page.

   Key

   TN - true negative **TP** - true positive **FN** - false negative
   FP - false positive **RC** - sent for confirmation **NT** - not tested
5. **Screening Summary:** Your screening result shown in the appropriate response category and your cut off for this sample.
6. Screening results for all cut-offs returned for this sample within your method group.
7. Total screening results over all your cut-offs for your laboratory's method.
8. Screening results for all cut-offs returned for this sample over all methods.
9. Total screening results over all cut-offs for all methods.
10. Screening results for other methods using same cut-off as your laboratory.
11. Performance history for this parameter, based on previous 10 samples.
12. Performance of your method over all cut-offs for this sample.
13. Performance history of your method over all cut-offs, based on the previous 10 samples.
14. Performance of all methods over all cut-offs for this sample.
15. Performance history of all methods over all cut-offs, based on the previous 10 samples.

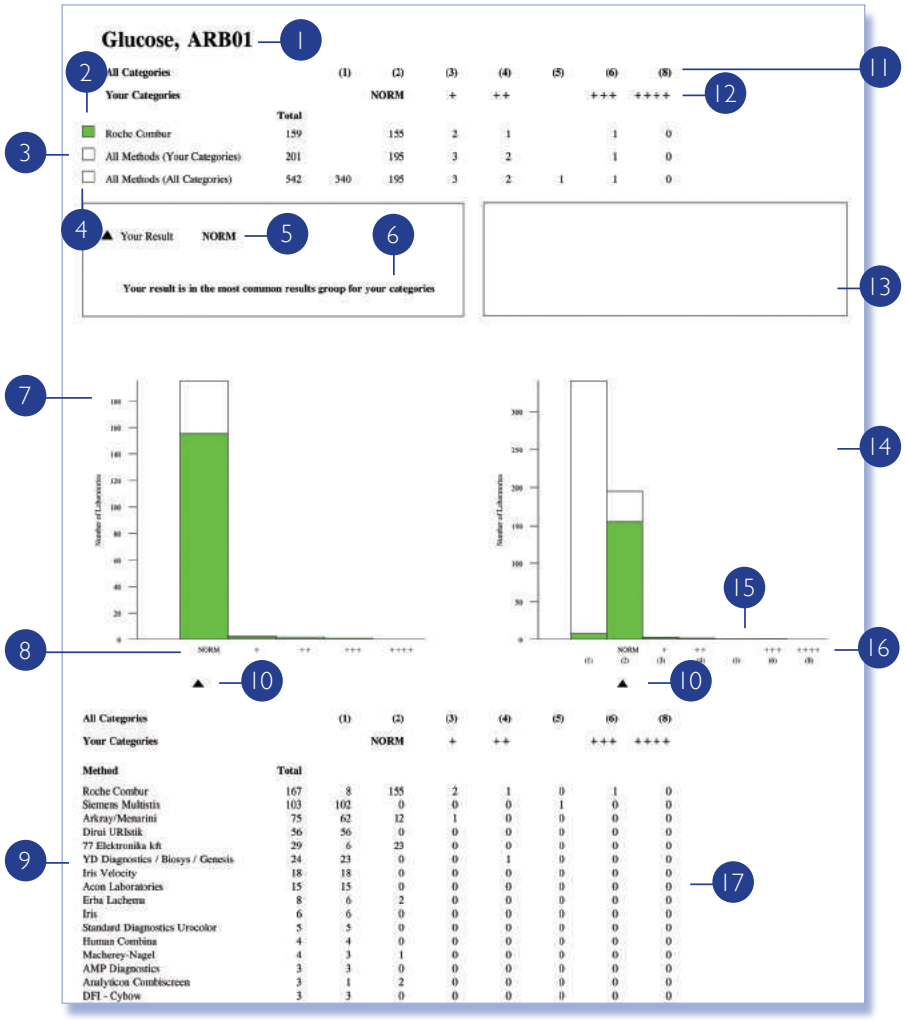
Quantitative statistical comparison available for each parameter.



1. **Quantitative Text Section:** Comparison statistics. Caution is needed when the N value is too small to support statistical significance.
2. Your Result.
3. Your Mean for Comparison.
4. **Standard Deviation Index** = $\frac{\text{(Your Result – Mean for Comparison)}}{\text{SD of Mean for comparison}}$
5. Running mean SDI = average of last 10 SDIs for this parameter (If fewer than 10 results, "Too Few" is printed).
6. **Quantitative Results Histogram:** This graph provides a quick visualisation of how your quantitative result falls into the overall picture for all methods and your method group.
7. All available method statistics for this sample.

Your performance for each parameter is presented in a simple, convenient report.

Screening Results



1. Categories are stated in your unit.
2. Your method group and categories.
3. Results from all methods (dipsticks) returning results in the same categories as your lab.
4. Results from all methods for all available categories.
5. Your Result.
6. Performance Statement.
7. **Your Categories Histogram:** A quick visualisation of how your lab's result falls into the overall picture for your categories.
8. Possible reporting categories for your method.
9. All available methods for this parameter.
10. Your Result.
11. All categories (result options) available for this parameter for any method (dipstick).
12. Your categories (available result options for chosen dipstick and unit).
13. Comments Box.
14. **All Categories Histogram:** a quick visualisation of how your lab's result falls into the overall picture for all categories.
15. Results submitted from a category not applicable to your method.
16. Your categories.
17. **Detailed summary of results:** This table enables you to see how you compare to all other results.

Your performance for multiple samples is presented in a convenient single report per quarterly distribution.

HBsAg

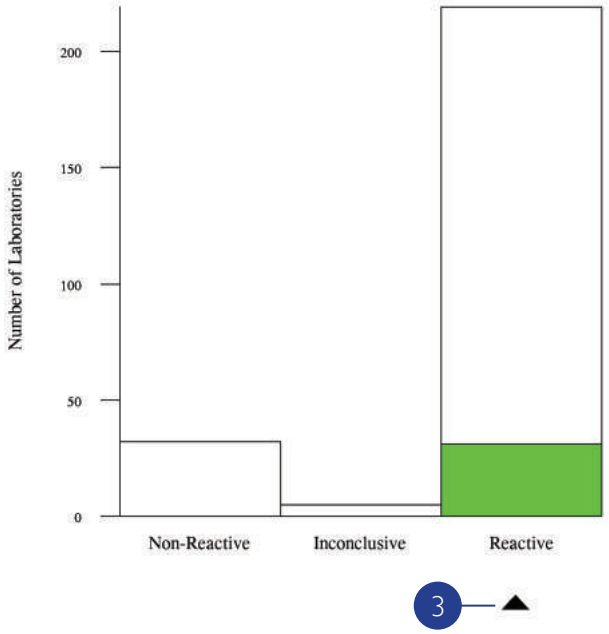
Sample 16

Your method: Roche Cobas 6000 / 8000
Your result: Reactive
Acceptable result (Method): Reactive

Overall results

Non-Reactive: 32
Inconclusive: 5
Reactive: 219

Method	N	Non-Reactive	Inconclusive	Reactive
Abbott Architect	60	0	0	60
Roche Cobas 4000/e411	34	1	0	33
Roche Cobas 6000 / 8000	31	0	0	31
Siemens/Bayer ADVIA Centaur	22	0	0	22
Roche Elecsys	17	1	0	16
Biomerieux VIDAS	15	1	0	14
Abbott Axsym	11	2	0	9
Beckman DxI 600 / 800	11	1	2	8
Ortho Vitros 3600/5600/ECi	11	0	0	11
Turklab/Toyo Labmen Rapidtest	5	3	0	2
Beckman Access/LXi725	4	0	2	2
SD Bioline Rapid Test HBsAg	4	3	0	1
Bio-Rad HBs PLUS	3	1	0	2
Diasorin/Abbott Murex ELISA	3	2	1	0
Siemens/DPC Immulite 2000/2500	3	3	0	0
Koroglu Laboquick HBsAg test	3	3	0	0
Roche Modular E170	3	0	0	3
Biomerieux Hepanostika	2	0	0	2
General Biologicals ELISA	2	2	0	0



1. Your qualitative result and chosen method are presented along with the acceptable result based on an 80% consensus. This consensus will be at the method level if there are >5 labs in the group or if there are <5 labs, will be at the all method level.
2. Overall Summary shows the number of results for this parameter and sample which are non-reactive, inconclusive or reactive.
3. Your Result is shown as a black triangle on the category chart compared to other laboratories in groups:

   All Methods **Your Method**
4. Summary shows performance of all the methods used to analyse the parameter.

Your performance for multiple samples is presented in a convenient single report per quarterly distribution.

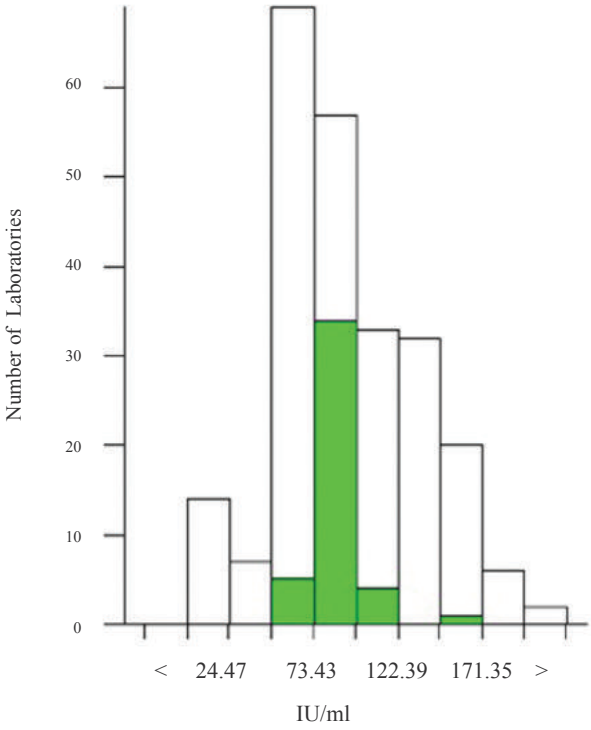
Anti-Rubella IgG, IU/ml

Sample 2

	N	Mean	CV%	U_m	SDPA	Exc.
All methods	210	92.574	37.2	2.97	34.42	31
Abbott Architect	39	83.219	8.7	1.46	7.27	5

1

Your Result	84.800	SDI	0.22
		RMSDI	Too Few
Mean for Comparison	83.219		

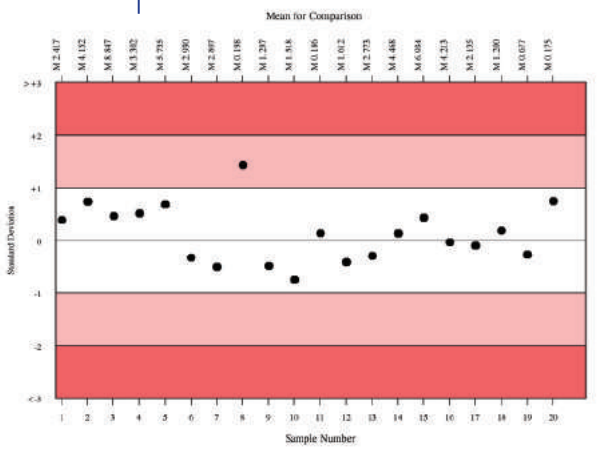


2

3

Method	N	Mean	CV%	U_m
Biomerieux VIDAS	48	150.979	9.8	2.97
Abbott Architect	44	83.219	8.7	1.46
Roche Cobas 6000/8000	18	58.792	3.6	0.68
Abbott Axsym	17	108.206	18.0	6.09
Siemens/DPC Immulite 2000/2500	17	90.800	6.2	1.94
Roche Cobas 4000/e411	17	59.973	7.0	1.35
Siemens/Bayer ADVIA Centaur	14	120.775	11.0	5.88
Roche Elecsys	11	57.043	3.9	1.05
Diasorin Liaison	9	52.388	18.0	4.16
Roche Modular E170	9	58.949	3.9	1.08
Beckman DxI 600/800	6	125.817	7.4	4.75

4



1 Quantitative statistics for All Methods and Your Method are presented in your chosen unit along with your result and your performance scores (SDI and RMSDI).

2 Your result is presented on the bar graph as a black triangle, showing how you compare to:

All Methods **Your Method**

3 Multi Method Statistics section provides an easy way of assessing the performance of the methods used to analyse the parameter.

4 **Levey-Jennings chart** - Your SDIs for previous 20 samples.

The End-of-Cycle Report is sent to all participants at the end of each cycle and provides a complete summary of statistics. Results can also be compared to the previous cycle.

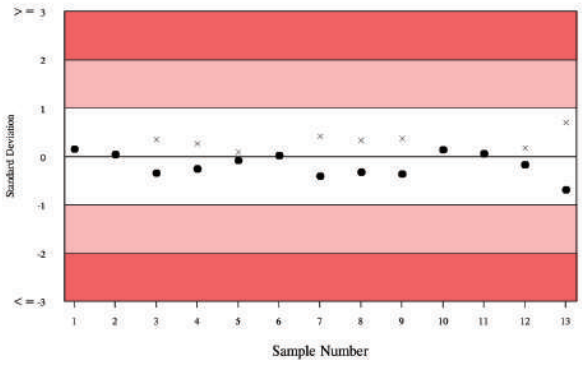
Albumin, g/l

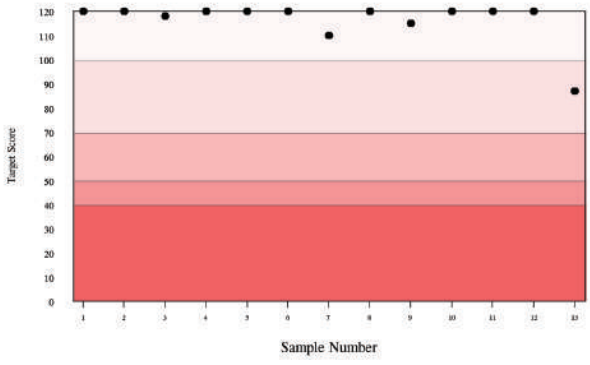
Method: Bromocresol Purple
Instrument: Siemens/Dade Dimension RxL/Max/Xpand
Reagent: Siemens/Dade Behring

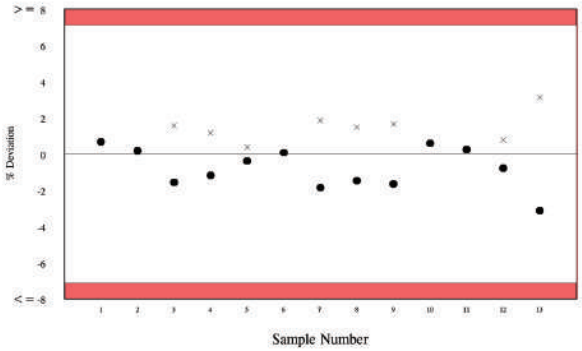
RIQAS TDPA: 7.1% **Biological Variation:** 3.9%

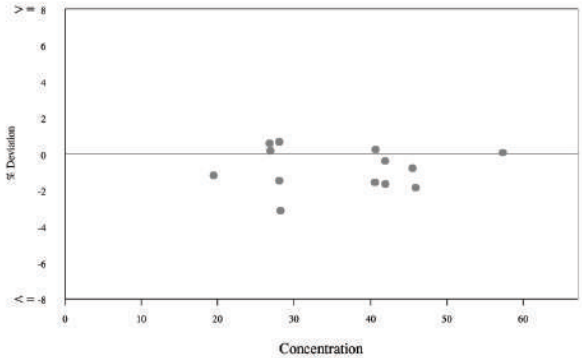
Sample	Result	Unit	N	Mean for Comparison	CV%	Um	SDPA	SDI	TS	%Deviation
1	28.200	g/l	68	I 28.013	2.4	0.10	1.26	0.15	120	0.67
2	26.900	g/l	87	I 26.853	2.7	0.10	1.21	0.04	120	0.17
3	39.900	g/l	71	I 40.531	2.5	0.15	1.82	-0.35	118	-1.56
4	19.200	g/l	81	I 19.429	2.5	0.07	0.87	-0.26	120	-1.18
5	41.700	g/l	67	I 41.859	2.0	0.13	1.88	-0.08	120	-0.38
6	57.300	g/l	87	I 57.257	2.7	0.21	2.58	0.02	120	0.08
7	45.000	g/l	72	I 45.850	2.1	0.14	2.06	-0.41	110	-1.85
8	27.600	g/l	87	I 28.013	2.5	0.09	1.26	-0.33	120	-1.47
9	41.200	g/l	70	I 41.891	2.2	0.14	1.88	-0.37	115	-1.65
10	26.900	g/l	83	I 26.742	3.3	0.12	1.20	0.13	120	0.59
11	40.700	g/l	71	I 40.601	2.2	0.14	1.83	0.05	120	0.24
12	45.100	g/l	80	I 45.456	2.2	0.14	2.04	-0.17	120	-0.78
13	27.300	g/l	63	I 28.179	2.0	0.09	1.27	-0.69	87	-3.12

	Cycle 45	Cycle 46
Cycle Average SDI	-0.23	-0.18
Cycle Average TS	110	116
Cycle Average %DEV	-1.05	-0.79
Cycle Average Absolute SDI	0.36	0.24
Cycle Average Absolute %DEV	1.63	1.06









The text section summarises the statistical information for all samples.

1 **Albumin, g/l**

2 **Method:** Bromocresol Purple
Instrument: Siemens/Dade Dimension RxL/Max/Xpand
Reagent: Siemens/Dade Behring

3 **RIQAS TDPA:** 7.1% **Biological Variation:** 3.9%

Your assay details at the end of the cycle. The RIQAS TDPA and biological variation for the parameter is shown if available.

4 Sample	5 Result	6 Unit	7 N	8 Mean	9 SDPA	10 Um	11 CV%	12 SDI	13 TS	14 % Deviation
1	28.200	g/l	68	I 28.013	1.26	0.10	2.4	0.15	120	0.7
2	26.900	g/l	87	I 26.853	1.21	0.10	2.7	0.04	120	0.2
3	39.900	g/l	71	M 40.531	1.82	0.15	2.5	-0.36	116	-1.5
4	19.200	g/l	81	I 19.429	0.87	0.07	2.5	-0.27	120	-1.2
5	41.700	g/l	67	I 41.942	1.88	0.13	2.0	-0.09	120	-0.4
6	57.300	g/l	87	I 57.257	2.58	0.21	2.7	0.02	120	0.1
7	45.000	g/l	72	I 45.850	2.06	0.14	2.1	-0.43	108	-1.8
8	27.600	g/l	87	I 28.011	1.26	0.09	2.5	-0.34	118	-1.5
9	41.200	g/l	70	I 41.823	1.88	0.14	2.2	-0.38	113	-1.6
10	26.900	g/l	83	I 26.742	1.20	0.12	3.3	0.14	120	0.6
11	40.700	g/l	71	I 40.601	1.83	0.13	2.2	0.06	120	0.2
12	45.100	g/l	80	I 45.119	2.05	0.14	2.2	-0.18	120	-0.8
13	27.300	g/l	63	I 28.454	1.27	0.09	2.0	-0.72	86	-3.1

Summary of lab's results and statistics are shown, including Mean for Comparison, SDPA, %CV, U_m, SDI, Target Score, %Deviation

	Cycle 45	Cycle 46
15 **Cycle Average SDI**	-0.23	-0.18
Cycle Average TS	110	116
Cycle Average %DEV	-1.05	-0.79
16 **Cycle Average Absolute SDI**	0.36	0.24
Cycle Average Absolute %DEV	1.63	1.06

Table containing a summary of the lab's performance for previous cycle and current cycle, including Average Absolute SDIs and %Deviations.

1. Report presented in your chosen unit
2. Your assay details as of the last sample
3. RIQAS TDPA and Biological variation
4. Sample number
5. Your results for each sample
6. Unit your result was returned in
7. Number of results used for statistical analysis
8. Mean for Comparison
9. SDPA = Standard Deviation for performance assessment
10. Uncertainty of Mean for Comparison
11. Coefficient of Variation (%)
12. Your Standard Deviation Index
13. Your Target Score
14. Your %Deviation
15. Cycle average of your performance indicators – Standard Deviation Index, Target Score and %Deviation

Cycle Average SDI = (Sum of SDIs returned for the completed cycle) / (Number of samples returned in cycle)

Cycle Average Target Score = (Sum of your Target Scores returned for the completed cycle) / (Number of samples returned in cycle)

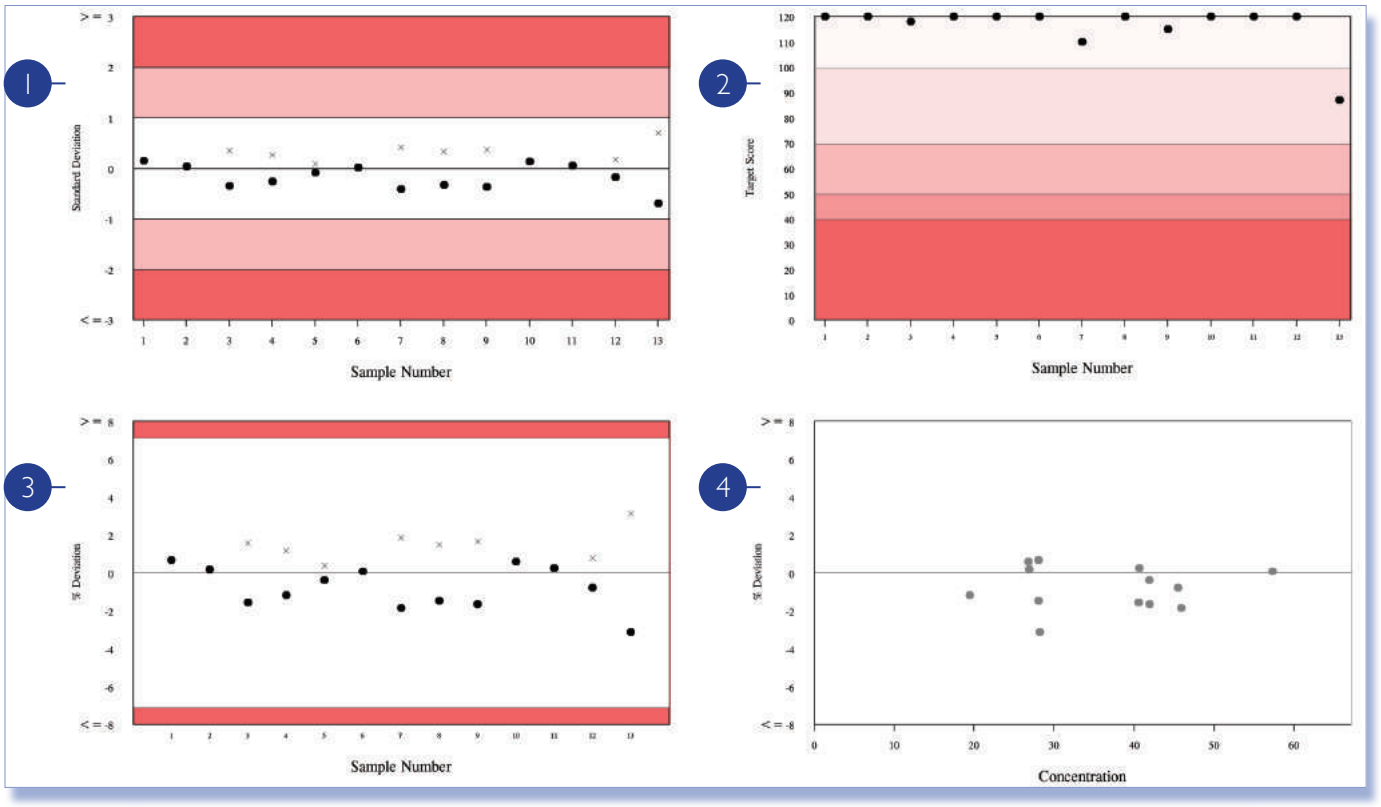
Cycle Average %Deviation = (Sum of your %Deviations returned for the completed cycle) / (Number of samples returned in cycle)

16. Cycle average for Absolute values of the lab's SDI and %Deviation. Absolute values show how far a value is from zero regardless of the sign. This is an indication of the magnitude of accuracy.

Cycle Average Absolute SDI = (Sum of your Absolute SDIs returned for the completed cycle) / (Number of samples returned in cycle)

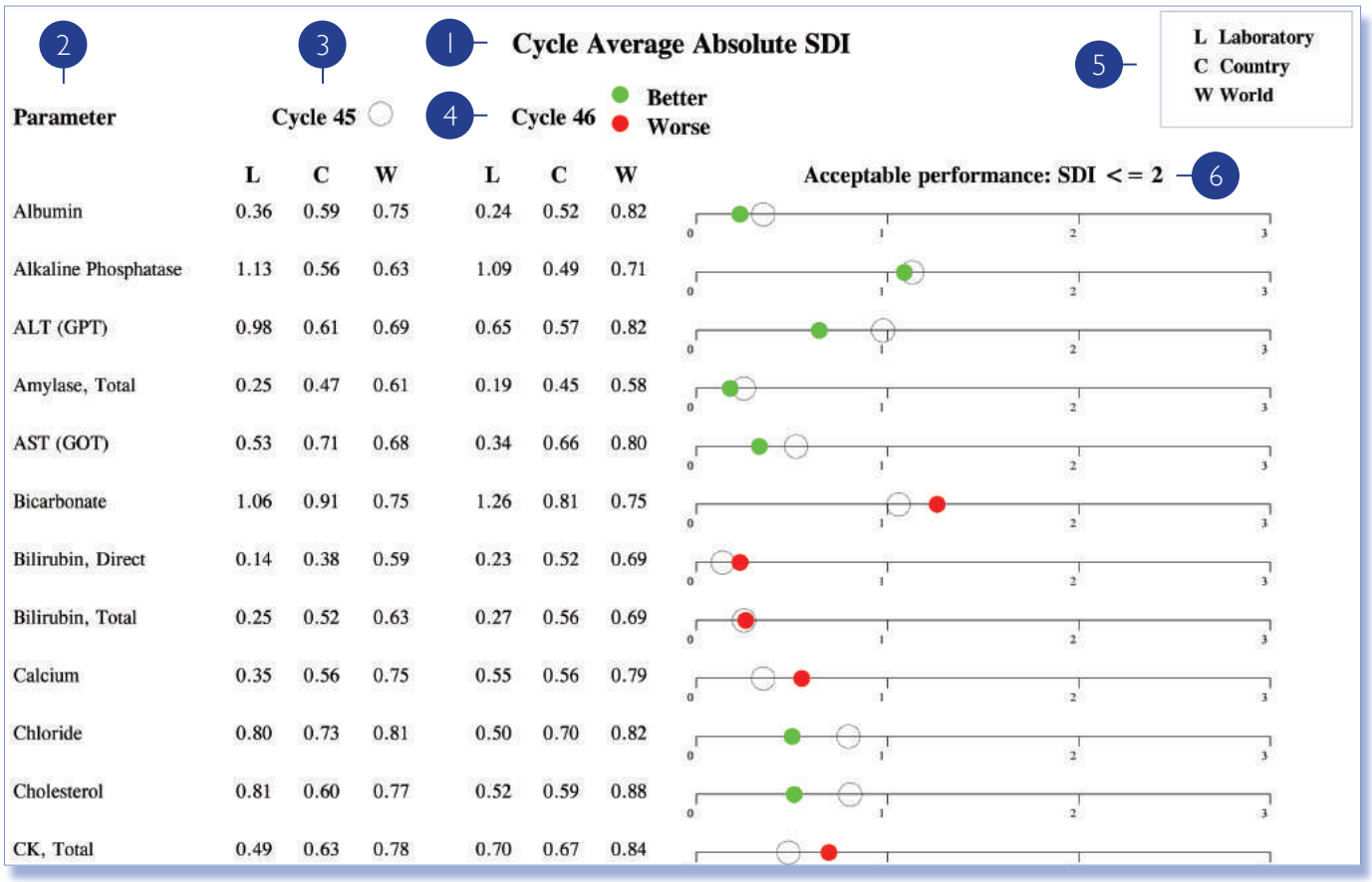
Cycle Average Absolute %Deviation = (Sum of your Absolute %Deviations returned for the completed cycle) / (Number of samples returned in cycle)

Lab's results for current cycle shown in various diagrams.



1	**Levey-Jennings chart**	Shows your SDIs for a full cycle. • Shows SDI (positive and negative) × Shows absolute SDI
2	**Target Score chart**	Shows your Target Scores for a full cycle.
3	**%Deviation by sample chart**	Shows your %Deviations for a full cycle. Acceptable limits equal to TDPA unless alternative limits are registered by the lab. • Shows %Deviation (positive and negative) × Shows absolute %Deviation
4	**%Deviation by Concentration chart**	Shows your results for a full cycle.

Based on the cycle average absolute SDI, this chart provides a visual representation of your laboratory's performance compared to the previous cycle.



Cycle Average Absolute SDI

L Laboratory
C Country
W World

Better
Worse

Acceptable performance: SDI <= 2

Parameter	Cycle 45 L	Cycle 45 C	Cycle 45 W	Cycle 46 L	Cycle 46 C	Cycle 46 W
Albumin	0.36	0.59	0.75	0.24	0.52	0.82
Alkaline Phosphatase	1.13	0.56	0.63	1.09	0.49	0.71
ALT (GPT)	0.98	0.61	0.69	0.65	0.57	0.82
Amylase, Total	0.25	0.47	0.61	0.19	0.45	0.58
AST (GOT)	0.53	0.71	0.68	0.34	0.66	0.80
Bicarbonate	1.06	0.91	0.75	1.26	0.81	0.75
Bilirubin, Direct	0.14	0.38	0.59	0.23	0.52	0.69
Bilirubin, Total	0.25	0.52	0.63	0.27	0.56	0.69
Calcium	0.35	0.56	0.75	0.55	0.56	0.79
Chloride	0.80	0.73	0.81	0.50	0.70	0.82
Cholesterol	0.81	0.60	0.77	0.52	0.59	0.88
CK, Total	0.49	0.63	0.78	0.70	0.67	0.84

1	**Report title - Cycle Average Absolute SDI**	This shows your performance this cycle compared to the previous cycle.
2	**Parameter list**	List of all parameters registered.
3	**Results for previous cycle**	Indicated by open circle on the chart.
4	**Results for current cycle**	Indicated by a closed circle on the chart.
5	**Legend**	Cycle Average Absolute SDIs are shown for: **L** Your results throughout the cycle **C** All labs within your own country **W** All labs Worldwide
6	**Graphical representation of Absolute SDIs**	Acceptable performance is ≤ 2. If Absolute SDI for current cycle is less than that for the previous cycle, this is indicated by a green circle. If Absolute SDI for current cycle is greater than that for the previous cycle, this is indicated by a red circle. The closer the circle is to zero, the better the performance.

An End-of-Cycle report will be issued for all registrations. However, the Certificate of Performance will only be available for parameters where results for at least 50% of samples in the cycle have been returned. Labs joining after the beginning of the cycle will only receive the Certificate of Performance if they meet this criteria. Any parameters not included on the Certificate of Acceptable Performance will be listed on the Notification of Unacceptable Performance.

RIQAS RANDOX INTERNATIONAL QUALITY ASSESSMENT SCHEME

CERTIFICATE OF ACCEPTABLE PERFORMANCE

RIQAS Department
Randox Laboratories
CRUMLIN
COUNTY ANTRIM (1)
BT29 4QY
UNITED KINGDOM

(2) **LABORATORY REF. NO.** XX/X

(3) **CLINICAL CHEMISTRY - CYCLE 47**

(4) **11/03/2013**

This is to certify that the above participant took part in a cycle of external quality assessment and achieved an acceptable level of performance (Cycle Average Absolute SDI < =2) for the following parameters:

(5)	(6) Cycle Average Absolute SDI
Albumin - Bromocresol Purple - Siemens/Dade Dimension RxL/Max/Xpand	0.50
Alkaline Phosphatase - Dade Dimension, AMP buffer - Siemens/Dade Dimension RxL/Max/Xpand	1.22
ALT (GPT) - Tris buffer with P5P - Siemens/Dade Dimension RxL/Max/Xpand	0.53
Amylase, Total - Dade Behring 2-chloro-pNPG3 - Siemens/Dade Dimension RxL/Max/Xpand	0.34
AST (GOT) - Tris buffer with P5P - Siemens/Dade Dimension RxL/Max/Xpand	0.55
Bicarbonate - Enzymatic - Siemens/Dade Dimension RxL/Max/Xpand	1.08
Bilirubin, Direct - Diazo with Sulphanilic Acid - Siemens/Dade Dimension RxL/Max/Xpand	0.19
Bilirubin, Total - Diazo with Sulphanilic Acid - Siemens/Dade Dimension RxL/Max/Xpand	0.26
Calcium - Cresolphthalein complexone - Siemens/Dade Dimension RxL/Max/Xpand	0.49
Chloride - ISE, indirect - Siemens/Dade Dimension RxL/Max/Xpand	0.70
Cholesterol - Dimension-Dade Behring reagents - Siemens/Dade Dimension RxL/Max/Xpand	0.54
CK, Total - CK-NAC (IFCC) - Siemens/Dade Dimension RxL/Max/Xpand	0.26
Creatinine - Alkaline picrate no deprot. - Siemens/Dade Dimension RxL/Max/Xpand	0.44
GGT - Gamma glut'3-carb'4-nitro (IFCC) - Siemens/Dade Dimension RxL/Max/Xpand	0.25
Glucose - Hexokinase - Siemens/Dade Dimension RxL/Max/Xpand	0.70

1	**Full registration address**	Your full registration address details
2	**Your lab reference number**	Used to identify each lab
3	**Programme / cycle number**	Programme and current, completed cycle number
4	**Date**	Date End-of-Cycle report is issued
5	**Parameters**	List of parameters broken down for which cycle absolute SDI is ≤ 2
6	**Average Absolute SDI**	Your Cycle Average Absolute SDI

Each EQA report should be evaluated and any poor performance investigated. A step by step approach should be adopted consisting of the following three steps:

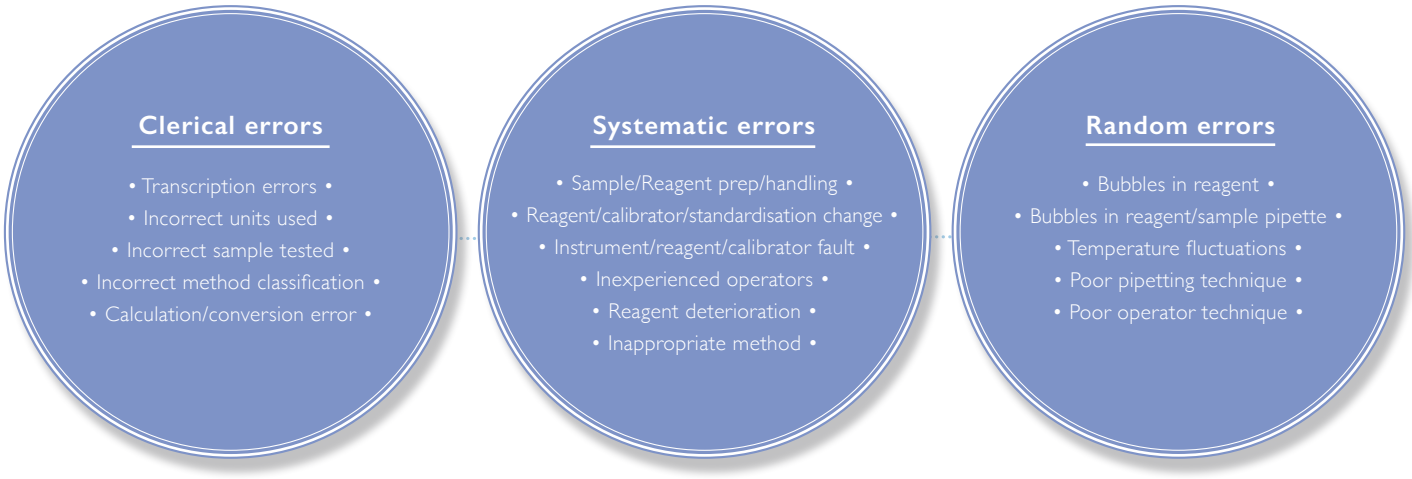
1. Investigate the source of the problem

In order to identify the source of the problem it is useful to be aware of the most common causes of poor EQA performance. Errors can occur at any stage of the testing process however EQA is most concerned with detecting analytical errors i.e. errors that occur during the analysis of the sample.

Most analytical errors can be easily divided into three main areas; clerical errors, systematic errors and random errors. Systematic errors result in inaccurate results that consistently show a positive or negative bias. Random errors on the other hand affect precision and result in fluctuations in either direction.

The flowchart (page 30) is designed to help you investigate any apparent poor performance.

It may be possible that, after extensive investigations, the root cause of the poor performance cannot be established. Poor performance for a single sample could be attributed to random error. If poor performance has been noted for several samples, a systematic error is the most likely cause and the analytical process should be reviewed.



A checklist similar to the one below is extremely useful when investigating poor EQA performance and may help you to determine the root cause of the problem and initiate corrective actions.

Laboratory: .....

Cycle Number: .....

Analysis Date: .....

Mean for Comparison: .....

Sample Number: .....

Analyte: .....

Lab Result: ..... **SDI:** ..... **%Dev:** .....

1. Specimen Handling

a. Samples received in good condition (Y) (N)
b. Samples stored/prepared appropriately (Y) (N)
c. Integrity of the sample is acceptable (Y) (N)

2. Clerical

a. Correct result entered (Y) (N)
b. Correct use of decimal point and units (Y) (N)
c. Calculations, if any, performed correctly (even if automated) (Y) (N)
d. Conversion factors applied to results before submission (Y) (N)

3. Registration and Mean for Comparison

a. Registered in the correct method/instrument group (Y) (N)
b. Changed method or instrument without advising RIQAS (Y) (N)
c. Mean for comparison changed due to the number of participants returning results e.g. from method to instrument (Y) (N)
d. An obvious bias between method and instrument means (check histogram and stats sections) (Y) (N)

4. Internal Quality Control

a. %Deviation of IQC (at similar conc to that of EQA) on sample analysis date acceptable (Y) (N)
b. Shift in IQC in the periods just before and after EQA sample analysis (Y) (N)
c. Trends in IQC in the periods before and after EQA sample analysis (Y) (N)
d. Random IQC variation on sample analysis date (Y) (N)
e. Error due to imprecision; check IQC in terms of %Deviation compared to deviation observed in EQA (Y) (N)
f. IQC target correctly assigned (Y) (N)

5. Calibration

a. Date of last calibration
b. Calibration frequency acceptable (Y) (N)
c. Last calibration acceptable (Y) (N)

6. Instrument

a. Daily maintenance performed on date of sample analysis (Y) (N)
b. Special maintenance performed prior to sample analysis (Y) (N)
c. Instrument operated correctly (Y) (N)
d. Operator fully trained (Y) (N)

7. Reagents

a. Reagents prepared and stored correctly (Y) (N)
b. Reagents within open vial stability (Y) (N)

8. EQA sample

a. Initial value
b. Re-run value
c. Issue observed in previous EQA samples at a similar concentration (check %Deviation by concentration and Levey Jennings charts) (Y) (N)
d. All parameters affected (to the same extent) - possible reconstitution error (check %Deviation on summary pages) (Y) (N)

Conclusion: .....

.....

.....

.....

Remedial Action: .....

.....

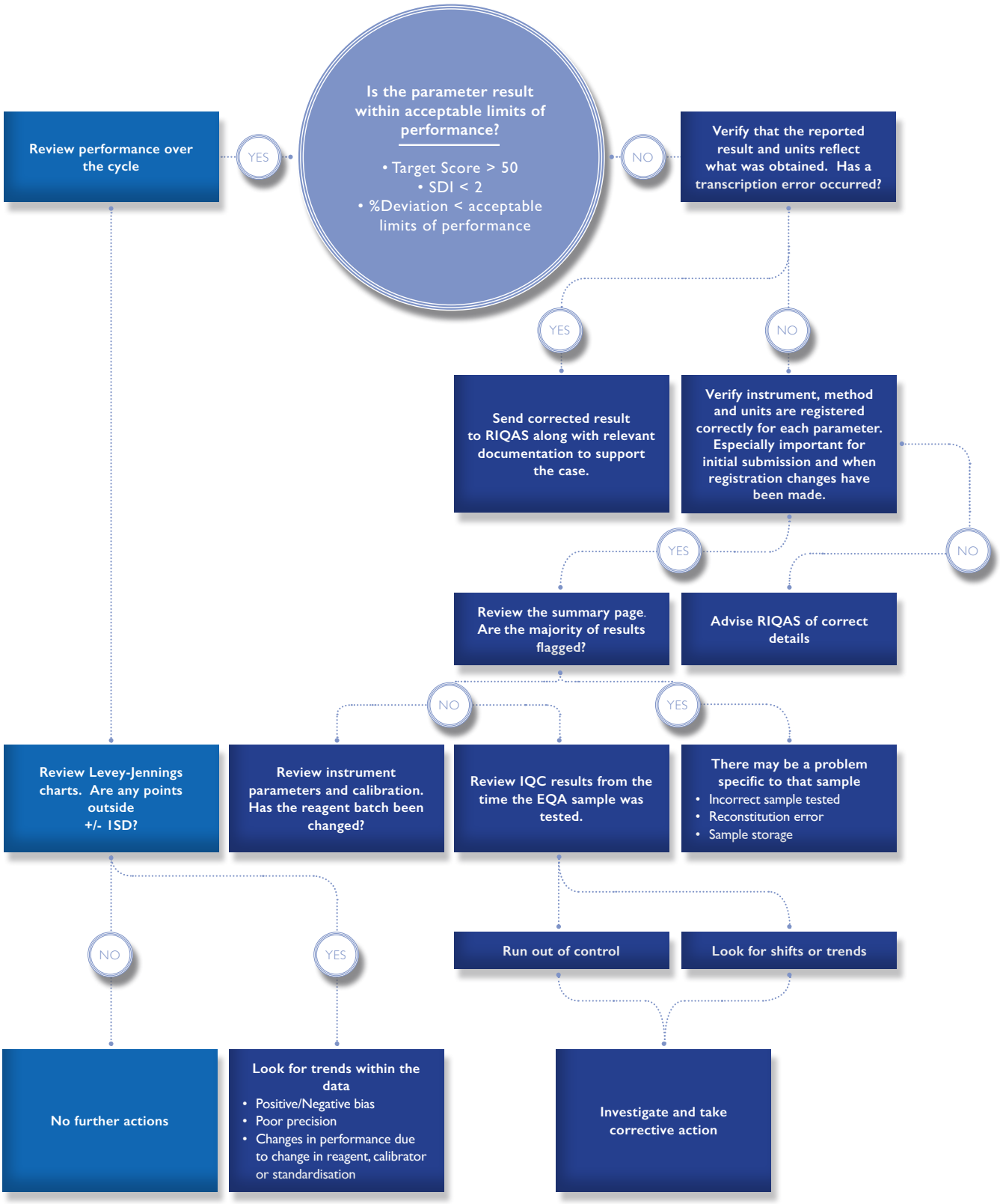
.....

.....

Lab Manager: ..... **Date:** .....

Lab Director: ..... **Date:** .....

The flow chart below can be used to help identify a possible root cause for poor EQA performance.

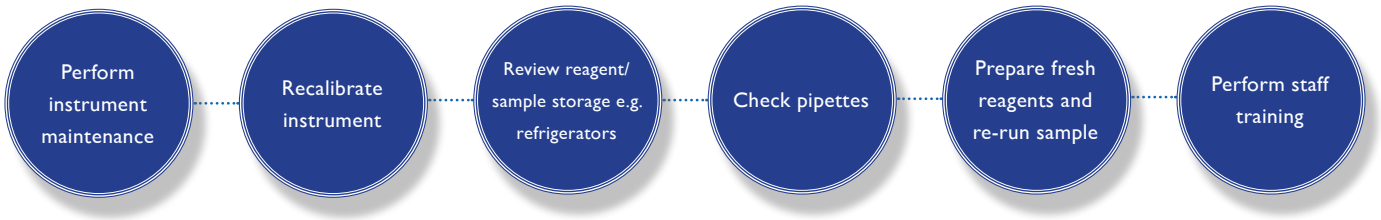


2. Implement corrective actions

A corrective action is an action taken to correct a problem or non-conformance. Some errors can be readily recognised as simple clerical errors and easily corrected. If there is evidence of systematic or random error however more detailed corrective actions must be taken.

Systematic Error

In the event of a systematic error the following suggested actions may help to resolve the problem:



Random Error

If all possible causes have been excluded, a single unacceptable result is most likely due to random error. Re-run the sample, if the result of repeat analysis is acceptable then corrective action is not required. If the issue persists, investigate possible sources of systematic error.

3. Check the effectiveness of corrective actions

The effectiveness or impact of any corrective actions taken can be assessed by continuing to monitor analytical performance over time.

AMMONIA/ETHANOL PROGRAMME+

RQ9164 (2 ml)
2 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

Ammonia
Ethanol

ANTI-TSH RECEPTOR PROGRAMME+

RQ9174 (1 ml)
1 Parameter
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

Anti-TSH Receptor (TRAb)

BLOOD GAS PROGRAMME *With target scoring*

RQ9134 (1.8 ml)
First registered instrument
10 Parameters

RQ9134/A (1.8 ml)
Subsequent instruments
10 Parameters

Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

pCO_2
pH
pO_2
CO_2(Total)
Ca++
Cl-
K+
Na+
Glucose
Lactate

BNP PROGRAMME+

RQ9165 (1 ml)
1 Parameter
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

BNP*

CARDIAC PROGRAMME *With target scoring*

RQ9127/a (1 ml)
2 Parameters only (choose from 7)

RQ9127/b (1 ml)
Full 7 Parameters

Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, lyophilised samples

CK, Total
CK-MB (Activity)
CK-MB (Mass)
Homocysteine
Myoglobin
Troponin I
Troponin T

CEREBROSPINAL FLUID PROGRAMME+

RQ9168 (3 ml)
12 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

Albumin
Albumin (electrophoresis)
α-1-globulin (electrophoresis)
α-2-globulin (electrophoresis)
β-globulin (electrophoresis)
Chloride
γ-globulin (electrophoresis)
Glucose
IgG
Lactate
Protein (Total)
Sodium

COAGULATION PROGRAMME *With target scoring*

RQ9135/a (1 ml)
5 Selected parameters only
(aPTT, PT, TT, Fibrinogen, Antithrombin III)

RQ9135/b (1 ml)
Full 17 Parameters

Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

aPTT
PT (including INR)
TT
Fibrinogen
Antithrombin III
Plasminogen
Protein C
Protein S
Factor II
Factor V
Factor VII
Factor VIII
Factor IX
Factor X
Factor XI
Factor XII
D-dimer*

PURPLE = The only parameters available on RQ9135/a

+ = Not accredited

* = Pilot study ongoing

CYFRA 21-1 PROGRAMME+

RQ9175 (1 ml)
1 Parameter
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

CYFRA 21-1 (Cytokeratin 19)

ESR PROGRAMME+

RQ9163 (4.5 ml)
1 Parameter (ESR)
2 samples per quarterly distribution, 1 x 12 month cycle, 12 months subcription, liquid ready-to-use samples

ESR

GENERAL CLINICAL CHEMISTRY PROGRAMME *With target scoring*

RQ9112 (5 ml)
10 Parameters only

RQ9112/S (5 ml)
17 Parameters only

RQ9113 (5 ml)
Full 52 Parameters

Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, reference method values, lyophilised samples

ACE (Angiotensin Converting Enzyme)*
Acid Phosphatase (Prostatic)
Acid Phosphatase (Total)
Albumin
Alkaline Phosphatase
ALT (ALAT)
Amylase (Pancreatic)
Amylase (Total)
AST (ASAT)
Bicarbonate
Bile Acids
Bilirubin (Direct)
Bilirubin (Total)
Calcium
Calcium (Ionised)
Chloride
Cholesterol
Cholinesterase
CK, Total (CPK)
Copper
Creatinine
D-3-Hydroxybutyrate
Fructosamine
γGT
GLDH
Glucose
HBDH
HDL-Cholesterol
Iron
Lactate
LD (LDH)
Lipase
Lithium
Magnesium
NEFA*
Osmolality
Phosphate (Inorganic)
Potassium
Protein (Total)
PSA
Sodium
TIBC
T_3 (Free)
T_3 (Total)
T_4 (Free)
T_4 (Total)
Triglycerides
TSH
UIBC
Urea
Uric Acid
Zinc

GLYCATED HAEMOGLOBIN PROGRAMME (HbA1c) *With target scoring*

RQ9129 (0.5ml)
2 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

HbA1c
Total Haemoglobin

HAEMATOLOGY PROGRAMME *With target scoring*

RQ9118 (2 ml)
11 Parameters
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, liquid ready-to-use samples

Haematocrit (HCT)
Haemoglobin (Hb)
Mean Cell Haemoglobin (MCH)
Mean Cell Haemoglobin Concentration (MCHC)
Mean Cell Volume (MCV)
Mean Platelet Volume (MPV)
Platelets (PLT)
Plateletcrit (PCT)
Red Blood Cell Count (RBC)
Red Cell Distribution Width (RDW)
Total White Blood Cell Count (WBC)

HUMAN URINE PROGRAMME *With target scoring*

RQ9115 (10 ml)
25 Parameters
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, lyophilised samples

ACR*
Albumin/Microalbumin
Amylase
Calcium
Chloride
Copper
Cortisol
Creatinine
Dopamine
Epinephrine
Glucose
Metanephrine
Norepinephrine
Normetanephrine
Magnesium
Osmolality
Oxalate
Phosphate (Inorganic)
Potassium
Protein (Total)
Sodium
Urea
Uric Acid
VMA
5-HIAA

PURPLE = The only parameters available on RQ9135/a

+ = Not accredited

* = Pilot study ongoing

IMMUNOASSAY PROGRAMME *With target scoring*

RQ9125/a (5 ml)	RQ9125/b (5 ml)	RQ9125/c (5 ml)	RQ9130 (5 ml)
4 Parameters only (choose from 55)	13 Parameters only (choose from 55)	Full 55 Parameters	Full 55 Parameters
Samples every two weeks, 2 x 6 monthly cycles, 12 month subscription (RQ9125/a, RQ9125/b, RQ9125/c), lyophilised samples			
Samples every month, 1 x 12 month cycle, 12 month subscription (RQ9130), lyophilised samples			
ACTH	DHEA Unconjugated	17-OH-Progesterone	T_4 (Free)
AFP	Digoxin	Paracetamol	T_4 (Total)
Aldosterone	Estriol Total*	Phenobarbital	Testosterone (Free)*
Amikacin*	Ethosuximide*	Phenytoin	Testosterone (Total)
Androstenedione*	Ferritin	Primidone*	Theophylline
β-2-Microglobulin	Folate	Progesterone	Thyroglobulin
CA125	FSH	Prolactin	Tobramycin*
CA15-3	Gentamicin	PSA (Free)	TSH
CA19-9	GH	PSA (Total)	Valproic Acid
Carbamazepine	hCG	PTH	Vancomycin
CEA	IgE	Salicylate*	Vitamin B12
Cortisol	Insulin	SHBG	1-25-$(OH)_2$-Vitamin D*
C-Peptide	LH	T_3 (Free)	25-OH-Vitamin D
DHEA-Sulphate	Oestradiol	T_3 (Total)	

IMMUNOASSAY SPECIALITY 1 PROGRAMME+ *With target scoring*

RQ9141 (2 ml)			
10 Parameters			
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples			
1-25-$(OH)_2$-Vitamin D	Anti-TG	Osteocalcin	Insulin
25-OH-Vitamin D	Anti-TPO	Procalcitonin	
C-Peptide	IGF-1	PTH	

IMMUNOASSAY SPECIALITY 2 PROGRAMME+

RQ9142 (2 ml)			
5 Parameters			
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples			
Calcitonin	Procalcitonin	Plasma Renin Activity	Renin (Direct Concentration)
Gastrin			

IMMUNOSUPPRESSANT PROGRAMME+

RQ9159 (2 ml)			
4 Parameters			
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples			
Cyclosporin	Everolimus	Sirolimus	Tacrolimus

LIPID PROGRAMME *With target scoring*

RQ9126/a (3 ml)	RQ9126/b (3 ml)		
3 Parameters only (choose from 7)	Full 7 Parameters		
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, lyophilised samples			
Apolipoprotein A1	Cholesterol (Total)	LDL-Cholesterol	Triglycerides
Apolipoprotein B	HDL-Cholesterol	Lipoprotein (a)	

LIQUID CARDIAC PROGRAMME *With target scoring*

RQ9136 (3 ml)			
9 Parameters			
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples			
CK-MB Mass	Homocysteine	Myoglobin	Troponin I
D-dimer	hsCRP	NT proBNP	Troponin T
Digoxin			

PURPLE = The only parameters available on RQ9135/a + = Not accredited * = Pilot study ongoing

MATERNAL SCREENING PROGRAMME *With target scoring*

RQ9137 (3 ml)
6 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

AFP	Total hCG	PAPP-A	Unconjugated Oestriol
free β-hCG	Inhibin A		

SEROLOGY (EBV) PROGRAMME+

RQ9153 (1 ml)
3 Parameters
3 samples per quarterly distribution, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results, liquid ready-to-use samples

Anti-EBV VCA IgG	Anti-EBNA IgG	Anti-EBV VCA IgM

SEROLOGY (HIV-HEPATITIS) PROGRAMME+

RQ9151 (1.8 ml)
10 Parameters
5 samples per quarterly distribution, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results, liquid ready-to-use samples

Anti-HIV-1	Anti-HCV	Anti-HTLV-II	HBsAg
Anti-HIV-2	Anti-HBc	Anti-HTLV-1&2 Combined	
Anti-HIV-1&2 Combined	Anti-HTLV-I	Anti-CMV	

SEROLOGY (SYPHILIS) PROGRAMME+

RQ9154 (1 ml)
1 Parameter
3 samples per quarterly distribution, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results, liquid ready-to-use samples

Syphilis (Methods available include immunoassay RPR, VDRL and TPHA)

SEROLOGY (ToRCH) PROGRAMME+

RQ9152 (1 ml)
12 Parameters
5 samples per quarterly distribution, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results, liquid ready-to-use samples

Anti-Toxoplasma IgG	Anti-Rubella IgM	Anti-HSV1 IgG	Anti-HSV 1 IgM
Anti-Toxoplasma IgM	Anti-CMV IgG	Anti-HSV2 IgG	Anti-HSV 2 IgM
Anti-Rubella IgG	Anti-CMV IgM	Anti-HSV-1&2 IgG Combined	Anti-HSV 1 + 2 IgM Combined

SPECIFIC PROTEINS PROGRAMME *With target scoring*

RQ9114 (3 ml) **RQ9160 (2 ml)** **RQ9161 (1 ml)**
26 Parameters
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, liquid ready-to-use samples

AFP	β-2-Microglobulin	IgA	Lambda Light Chain (Total)
Albumin	Ceruloplasmin	IgE	Prealbumin (Transthyretin)
α-1-Acid glycoprotein	Complement C_3	IgG	Retinol Binding Protein
α-1-Antitrypsin	Complement C_4	IgM	Rheumatoid Factor
α-2-Macroglobulin	C-Reactive Protein	Kappa Light Chain (Free)	Transferrin
Anti Streptolysin O	Ferritin	Kappa Light Chain (Total)	
Antithrombin III	Haptoglobin	Lambda Light Chain (Free)	

SWEAT TESTING PROGRAMME+

RQ9173 (2 ml)
3 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

Chloride	Conductivity	Sodium

PURPLE = The only parameters available on RQ9135/a + = Not accredited * = Pilot study ongoing

THERAPEUTIC DRUGS PROGRAMME *With target scoring*

RQ9111 (5 ml)
18 Parameters
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription, Weighed-in values, lyophilised samples

Amikacin	Ethosuximide	Phenobarbital	Tobramycin
Caffeine	Gentamicin	Phenytoin	Valproic Acid
Carbamazepine	Lithium	Primidone	Vancomycin
Cyclosporine	Methotrexate	Salicylic Acid	
Digoxin	Paracetamol (Acetaminophen)	Theophylline	

TRACE ELEMENTS IN BLOOD PROGRAMME+

RQ9172 (3 ml)
7 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

Copper	Lead	Manganese	Zinc
Iodine	Magnesium	Selenium	

TRACE ELEMENTS IN SERUM PROGRAMME+

RQ9170 (3 ml)
10 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

Aluminium	Copper	Manganese	Zinc
Chromium	Iodine	Nickel	
Cobalt	Lead	Selenium	

TRACE ELEMENTS IN URINE PROGRAMME+

RQ9171 (3 ml)
11 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, lyophilised samples

Cadmium	Copper	Magnesium	Nickel
Chromium	Iodine	Manganese	Thallium
Cobalt	Lead	Molybdenum	

URINALYSIS PROGRAMME+

RQ9138 (12 ml)
14 Parameters
Samples every 2 months, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

Albumin	Galactose	Leukocytes	Specific Gravity
Bilirubin	Glucose	Nitrite	Urobilinogen
Blood	hCG	pH	
Creatinine	Ketones	Protein	

URINE TOXICOLOGY PROGRAMME+

RQ9139 (5 ml)
20 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription, liquid ready-to-use samples

Benzoylecgonine	d-Methamphetamine	MDMA	Phenobarbital
Buprenorphine	EDDP	Methadone	Secobarbital
Cannabinoids (THC)	Ethanol	Nortriptyline	
Cotinine*	Free Morphine	Norpropoxyphene	
Creatinine	Lorazepam	Oxazepam	
d-Amphetamine	LSD	Phencyclidine	

PURPLE = The only parameters available on RQ9135/a + = Not accredited * = Pilot study ongoing

RANDOX
QUALITY CONTROL

INTERNATIONAL HEADQUARTERS

Randox Laboratories Ltd, 55 Diamond Road, Crumlin, County Antrim, BT29 4QY, United Kingdom

☎ +44 (0) 28 9442 2413 🖷 +44 (0) 28 9445 2912 ✉ marketing@randox.com 🔗 randoxqc.com

AUSTRALIA
Randox (Australia) Pty Ltd
Tel: +61 (0) 2 9615 4640

BRAZIL
Randox Brasil Ltda
Tel: +55 11 5181-2024

CHINA
Randox Laboratories Ltd
Tel: +86 021 6288 6240

CZECH REPUBLIC
Randox Laboratories S.R.O.
Tel: +420 2 1115 1661

FRANCE
Laboratoires Randox
Tel: +33 (0) 130 18 96 80

GERMANY
Randox Laboratories GmbH
Tel: +49 (0) 2151/93 706-11

HONG KONG
Randox Laboratories Hong Kong Ltd
Tel: +852 3595 0515

ITALY
Randox Laboratories Ltd
Tel: +39 06 9896 8954

INDIA
Randox Laboratories India Pvt Ltd
Tel: +91 80 280 250 00

POLAND
Randox Laboratories Polska Sp. z o.o.
Tel: +48 22 862 1080

PORTUGAL
Randox Laboratorios Quimica Analitica
Tel: +351 22 589 8320

PUERTO RICO
Clinical Diagnostics of Puerto Rico, LLC
Tel: +1 787 701 7000

REPUBLIC OF IRELAND
Randox Teoranta
Tel: +353 7495 22600

SLOVAKIA
Randox S.R.O.
Tel: +421 2 6381 3324

SOUTH AFRICA
Randox Laboratories SA (Pty) Ltd
Tel: +27 (0) 11 312 3590

SOUTH KOREA
Randox Korea
Tel: +82 (0) 31 478 3121

SPAIN
Laboratorios Randox S.L.
Tel: +34 93 475 09 64

SWITZERLAND
Randox Laboratories Ltd (Switzerland)
Tel: +41 41 810 48 89

USA
Randox Laboratories-US, Ltd
Tel: +1 304 728 2890

VIETNAM
Randox Laboratories Ltd Vietnam
Tel: +84-8-39 11 09 04

RIQAS

find out more

✉ mail@riqas.com 🔗 riqas.net 🔗 riqas.com

UKAS PROFICIENCY TESTING
0010

LT033FEB16