

RANDOX

RANDOX INTERNATIONAL QUALITY ASSESSMENT SCHEME



RANDOX

QUALITY CONTROL

RIQAS

THE LARGEST INTERNATIONAL EQA SCHEME
WITH OVER 76,000 LAB PARTICIPANTS



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Whilst every attempt is made to ensure that information is accurate and up-to-date, some information is subject to change.

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BENEFITS



Delivering a comprehensive yet cost effective EQA solution, RIQAS will help meet regulatory requirements and increase confidence in test system accuracy.



Large Database of Users

- A high level of participation means peer group numbers are maximised whilst ensuring availability of data for a wide range of instruments and methods.



User-friendly Reports

- Simple, one page per parameter format, enables at-a-glance performance assessment, saving valuable laboratory time.
- Complimentary multi-instrument and interlaboratory reports allow comparative performance assessment of all laboratory systems and multiple connected laboratories.
- End-of-Cycle reports, summarising performance compared to the previous cycle, allows you to identify improvements in quality over time.



Cost Effective

- 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.
- Register up to five instruments per programme (volume permitting) at no extra cost for comparative performance assessment.



Frequency

- 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.



High Quality Samples

- Samples spanning clinically relevant levels allow 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.



Highly Accredited

- Programmes accepted by National and International accreditation bodies worldwide.
- Participant certificates provide evidence of participation in a reputable EQA scheme.

RIQAS is the largest international EQA scheme in the world. It is used by more than 76,000 laboratory participants in 139 countries. 35 programmes are currently available.

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 (Bacterial Identification)
- Neonatal Bilirubin
- Serology Epstein Barr Virus (EBV)
- Serology (HIV/Hepatitis)
- Serology (Syphilis)
- Serology (ToRCH)
- Serum Indices
- Specific Proteins
- Sweat Testing
- Therapeutic Drugs
- Urinalysis
- Urine Toxicology

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 Quality Assurance in Pathology Committee (QAPC).
- Recognised by various National Quality Assurance Advisory Panels (NQAAP).

Independent Advisory Panel

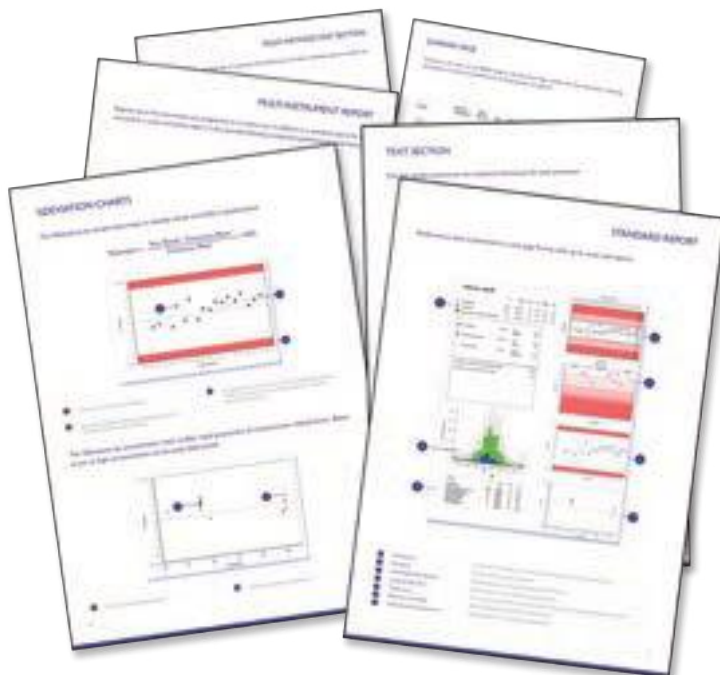
RIQAS participants have access to an independent advisory panel consisting of scientific and clinical experts. This ensures professional and ethical conduct of the scheme and participant confidentiality.

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

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 uniquely 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



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 (*available for quantitative reports only*).

Multi-Instrument Reports

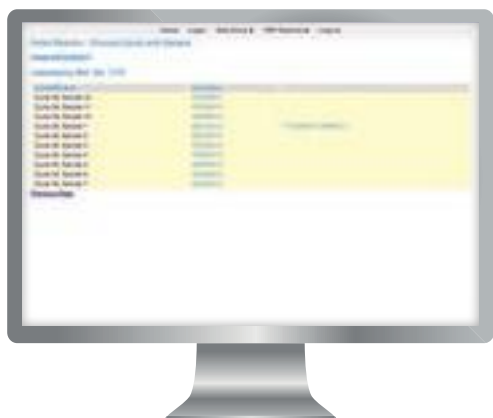
Laboratories can register up to five instruments at no extra cost. Individual reports for each instrument plus a unique multi-instrument report are provided. The multi-instrument report plots the performance of each individual instrument on a single, colour coded Levey-Jennings chart, ensuring instant identification of any differences in instrument performance. Additional sample packs may be ordered as required if volume supplied is insufficient for the registered instruments.

Laboratory Group Reports

The group reporting facility enables laboratory groups or chains to monitor the performance of satellite sites. Each affiliated laboratory will receive their individual reports with the group supervisor also receiving a summary report comparing each laboratory in the network.

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.



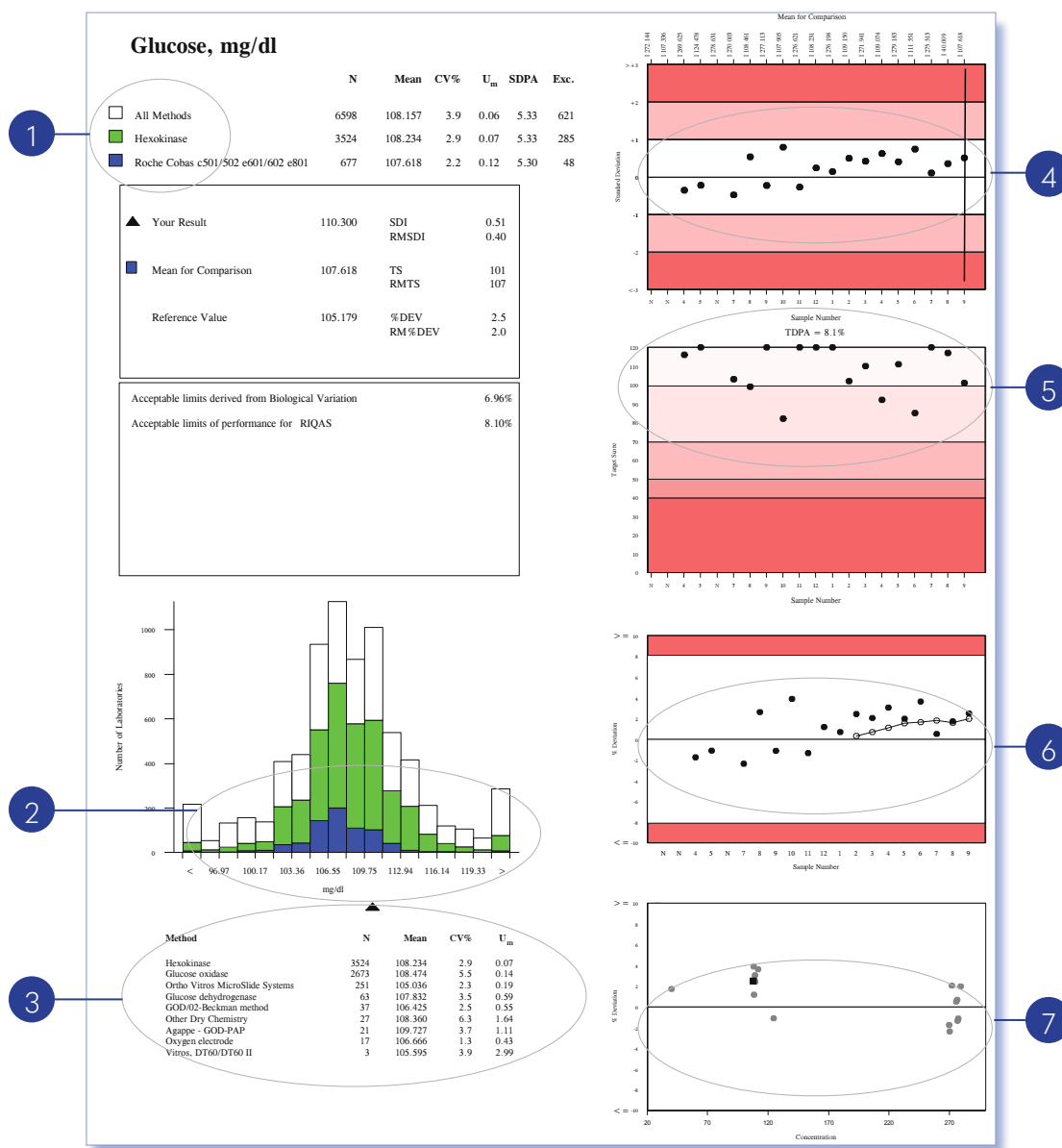
PARTICIPATION IN RIQAS



Participation in RIQAS follows these simple steps:



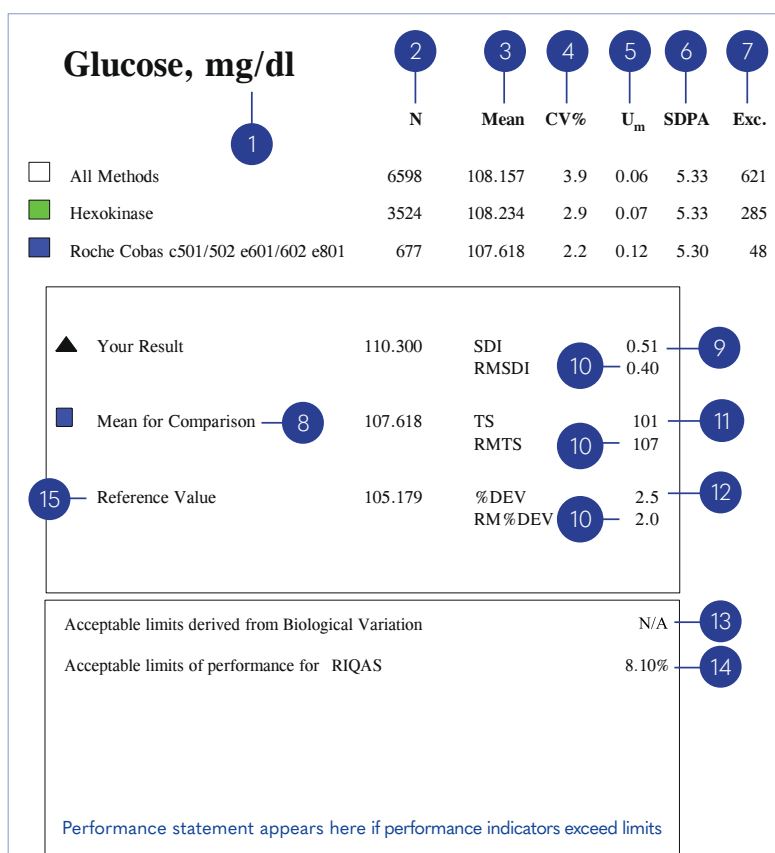
Performance data is presented in a one page format with up to seven sub-reports.



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

TEXT SECTION

The text section summarises the statistical information for each parameter.



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.

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

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 x 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 x SDPA) then SDPA_{adjusted} = SDPA
- 7 After statistical reduction, some results are excluded from the mean for comparison.
- 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 = $\frac{\text{Your Result} - \text{Mean for Comparison}}{SDPA_{\text{adjusted}}}$
- 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.

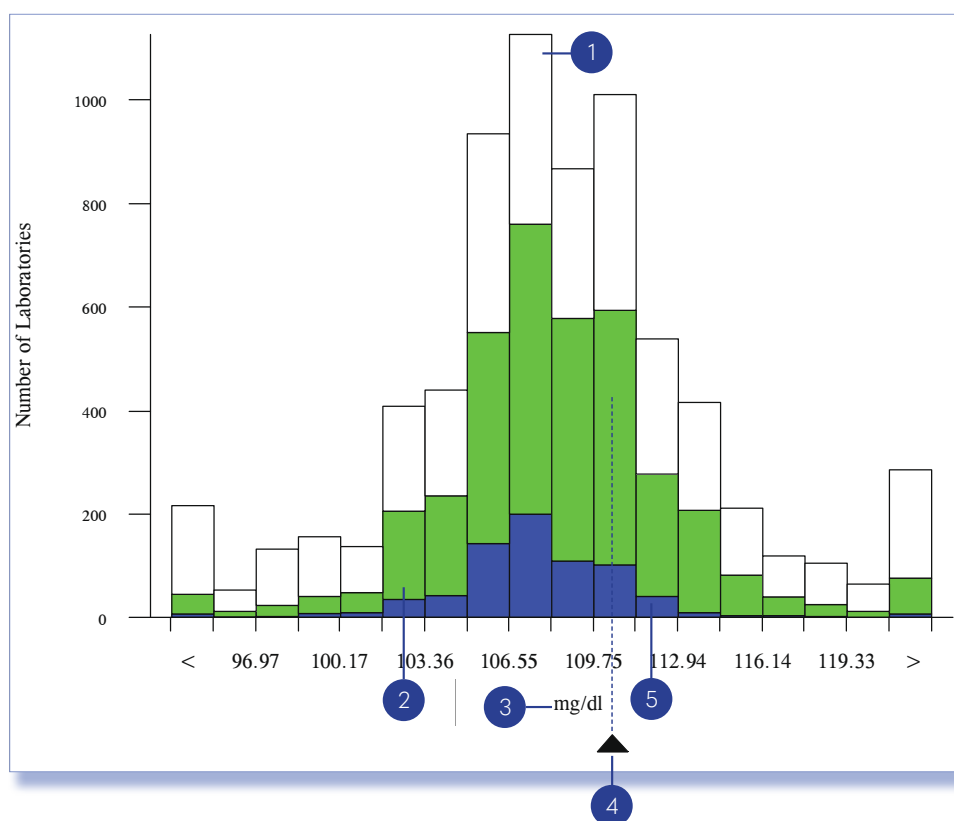
$$TS = \log_{10} \left(\frac{3.16 \times TDPA}{|\%Dev|} \right) \times 100$$
- 12 %Deviation from the Mean for Comparison -

$$\%Dev = \frac{\text{Your Result} - \text{Mean for Comparison}}{\text{Mean for Comparison}} \times 100$$

The closer the value is to zero, the better the performance.
- 13 Biological Variation - Not currently available - please review online.
- 14 Performance limit set for this parameter.
- 15 Reference values quoted for information purposes, where applicable.

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)



- | | |
|--|---|
| <p>1 Total of 1126 laboratories reported values between 106.55 & 108.15.</p> <p>2 200 laboratories reported values between 101.77 & 103.36 in your method group.</p> <p>3 RIQAS reports show your unit of measurement.</p> | <p>4 Your result is indicated by the black triangle.</p> <p>5 41 laboratories reported values between 111.35 & 112.94 in your instrument group.</p> |
|--|---|

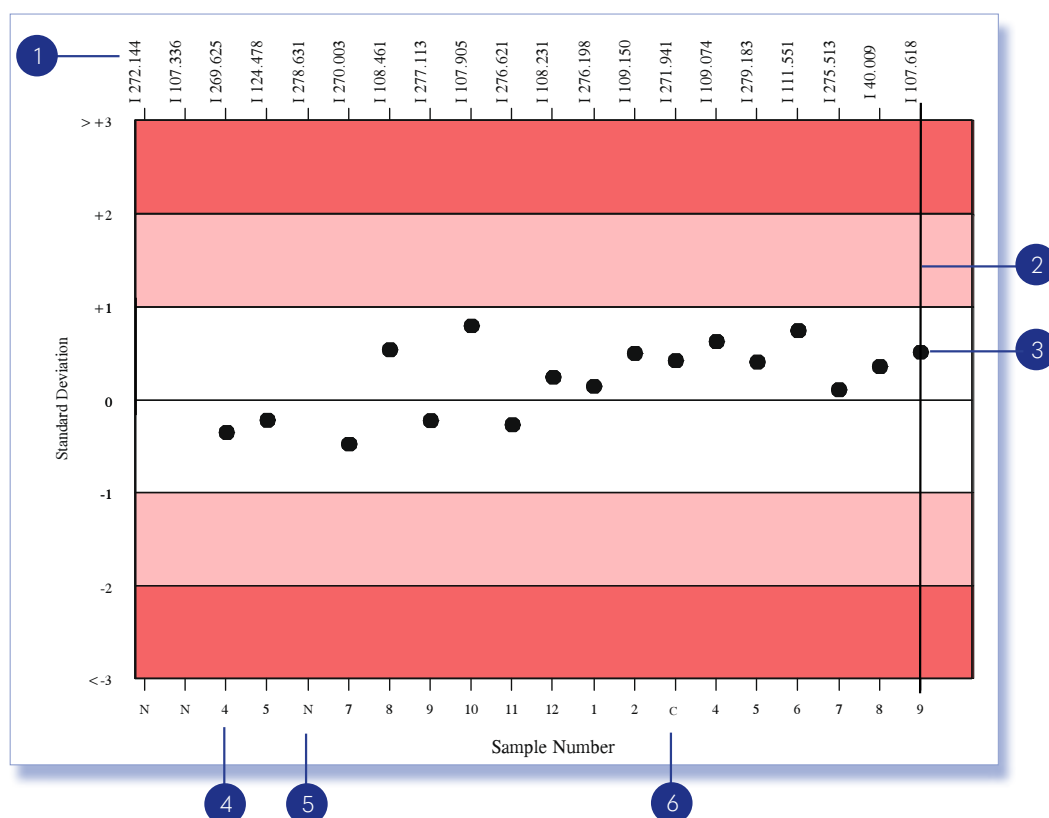
MULTI-METHOD STAT SECTION



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	3524	108.234	2.9	0.07
Glucose oxidase	2673	108.474	5.5	0.14
Ortho Vitros MicroSlide Systems	251	105.036	2.3	0.19
Glucose dehydrogenase	63	107.832	3.5	0.59
GOD/02-Beckman method	37	106.425	2.5	0.55
Other Dry Chemistry	27	108.360	6.3	1.64
Agappe - GOD-PAP	21	109.727	3.7	1.11
Oxygen electrode	17	106.666	1.3	0.43
Vitros, DT60/DT60 II	3	105.595	3.9	2.99

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 The Mean for Comparison for each sample is indicated at the top of the chart. This allows 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 Sample number.

5 N = No result returned in time for this registration/sample.

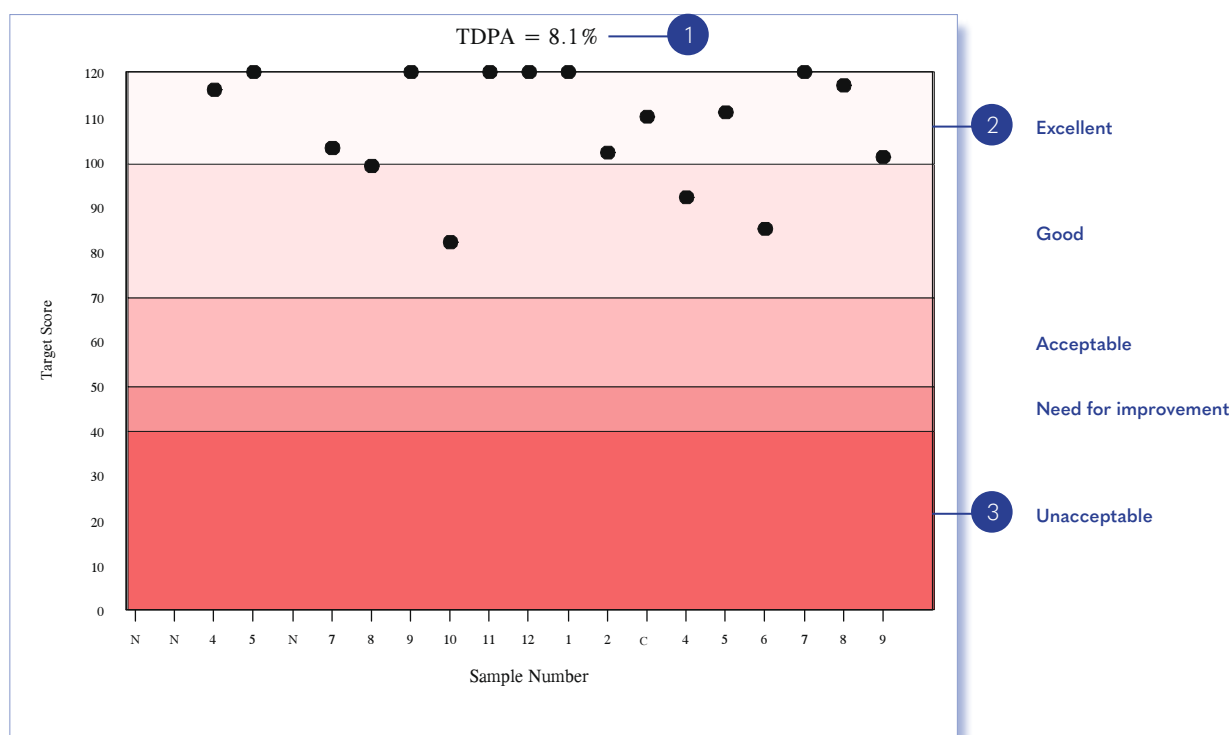
6 C = Corrected results will be accepted for non-analytical errors. Corrected results will be accepted up to 4 weeks after the final submission deadline, on application, with evidence of analysis. Late results are only accepted if there has been a Randox error.

R = Incorrect results can be removed retrospectively on request.

TARGET SCORE CHART



The Target Score (TS) allows you to assess your 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).



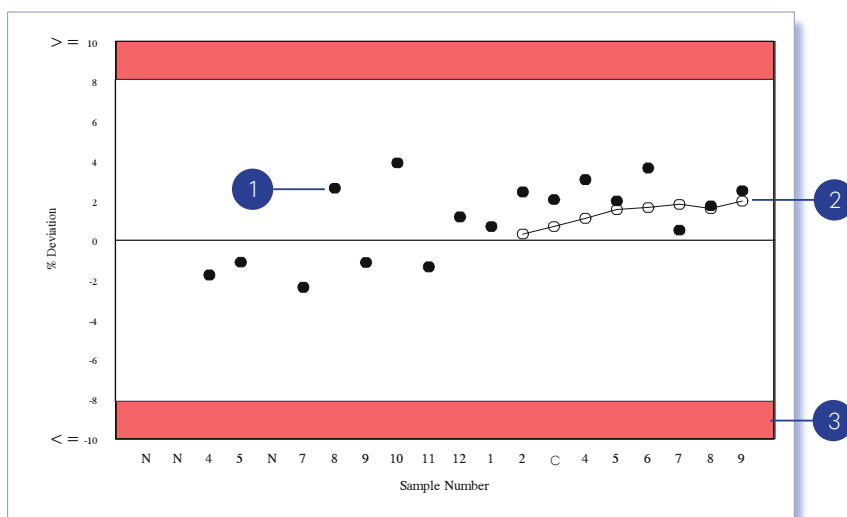
1 This is the upper deviation limit of performance for this parameter. TDPAs are reviewed regularly and deemed fit for purpose by the RIQAS Advisory Panel.

2 High scores ≥ 50 in the lighter shaded area represent acceptable, good or excellent performance.

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

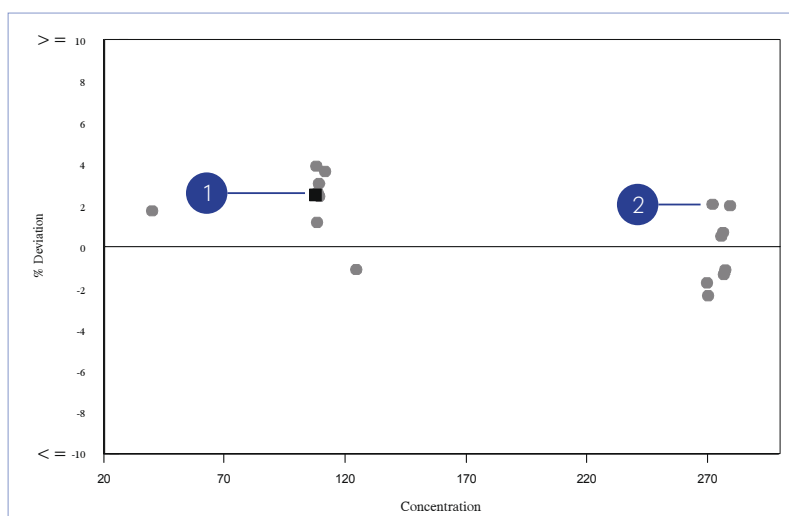
The %Deviation by sample chart helps to identify trends and shifts in performance.

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



- 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.

The %Deviation by concentration 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.

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	<u>2.57</u>	2.64	<u>51.3</u>	47.2	<u>31</u>	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	<u>2.4</u>	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		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	<u>-2.02</u>	-0.57	<u>-14.9</u>	-4.0	<u>41</u>	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 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

- 2 RMSDI - is the Running Mean of the 10 previous SDIs (if fewer than 10 results on file, "Too Few" is printed).

- 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 All poor performance is highlighted in bold and underlined.

- 6 Overall RMSDI = average RMSDI for this sample distribution.

- 7 Overall RM%DEV = average RM%DEV for this sample distribution.

- 8 Overall RMTS = average RMTS for this sample distribution.

END-OF-CYCLE QUA Labcare

The End-of-Cycle Report is sent to labs receiving standard reports 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

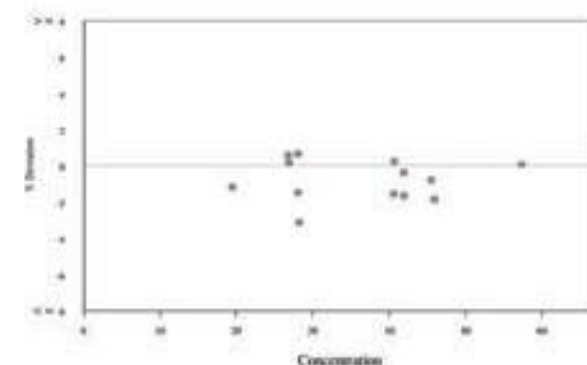
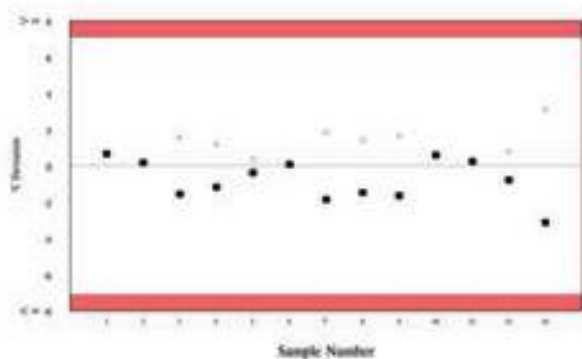
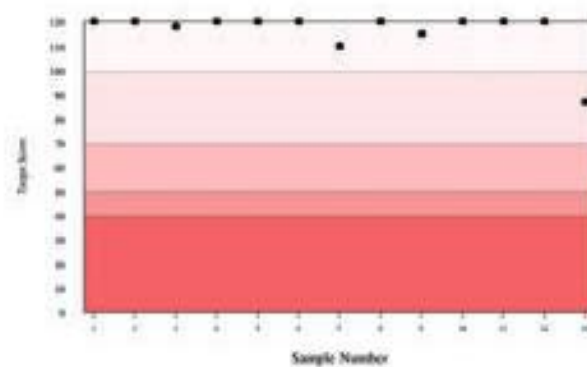
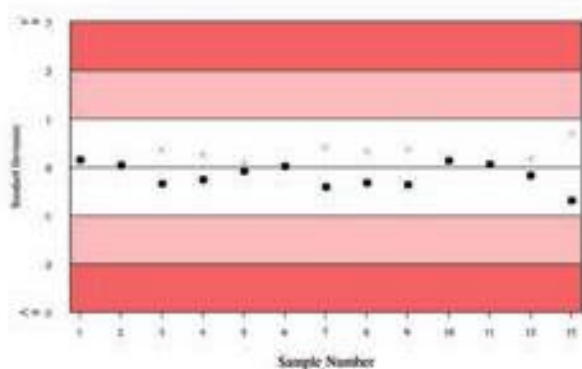
RIQAS TDPA: 7.1% Biological Variation: 3.9%

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



END-OF-CYCLE REPORT TEXT SECTION



The text section summarises the statistical information for all samples.

1 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%

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

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

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

	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

Table containing a summary of your performance for previous cycle and current cycle, including Average Absolute SDIs and %Deviations.

END-OF-CYCLE REPORT Labcare

- 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 (including comparison level)
- 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.

$$\text{Cycle Average SDI} = \frac{\text{(Sum of SDIs returned for the completed cycle)}}{\text{(Number of samples returned in cycle)}}$$

$$\text{Cycle Average Target Score} = \frac{\text{(Sum of your Target Scores returned for the completed cycle)}}{\text{(Number of samples returned in cycle)}}$$

$$\text{Cycle Average \%Deviation} = \frac{\text{(Sum of your \%Deviations returned for the completed cycle)}}{\text{(Number of samples returned in cycle)}}$$

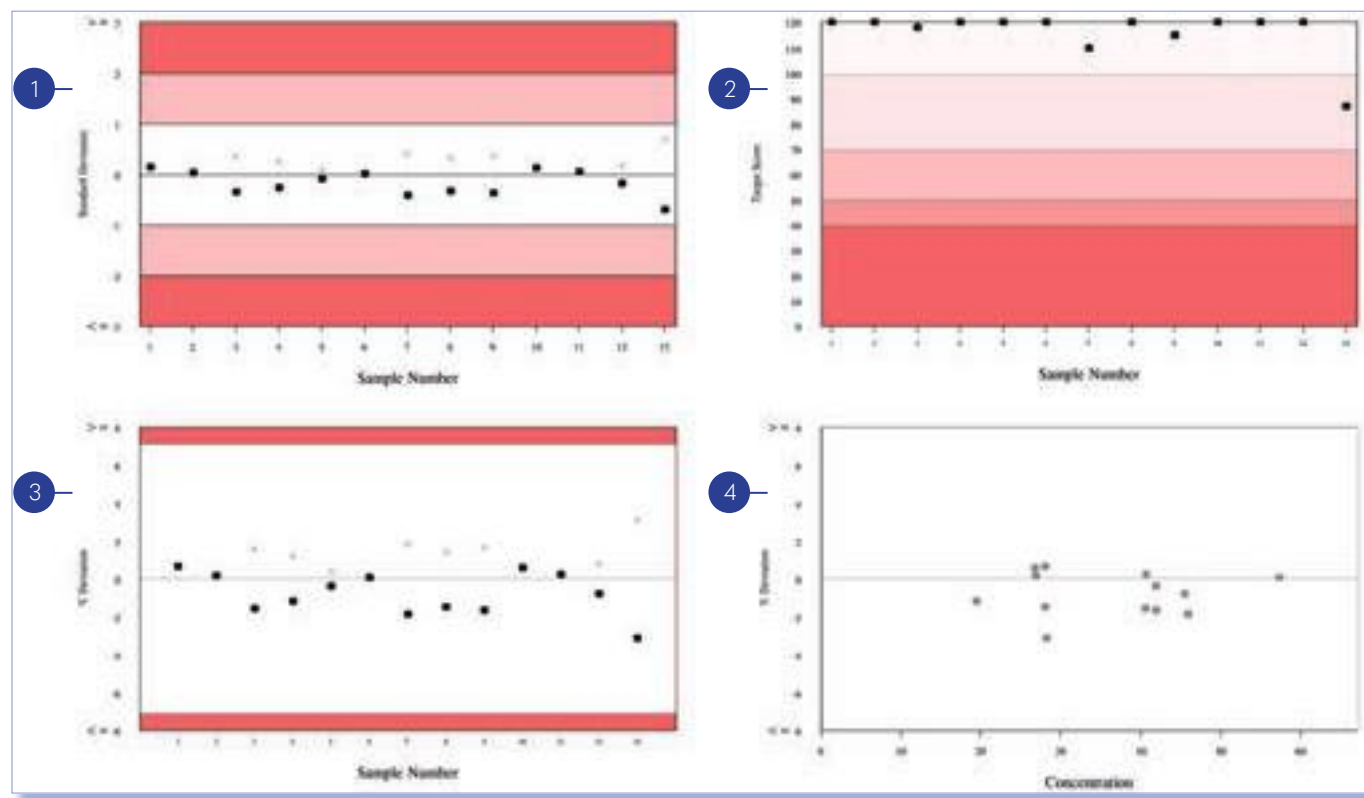
- 16 Cycle average for Absolute values of your SDI and %Deviation. Absolute values show how far a value is from zero regardless of the sign. This is an indication of the magnitude of accuracy.

$$\text{Cycle Average Absolute SDI} = \frac{\text{(Sum of your Absolute SDIs returned for the completed cycle)}}{\text{(Number of samples returned in cycle)}}$$

$$\text{Cycle Average Absolute \%Deviation} = \frac{\text{(Sum of your Absolute \%Deviations returned for the completed cycle)}}{\text{(Number of samples returned in cycle)}}$$

END-OF-CYCLE CHART SECTION REPORT Labcare

Your results for current cycle shown in various diagrams.

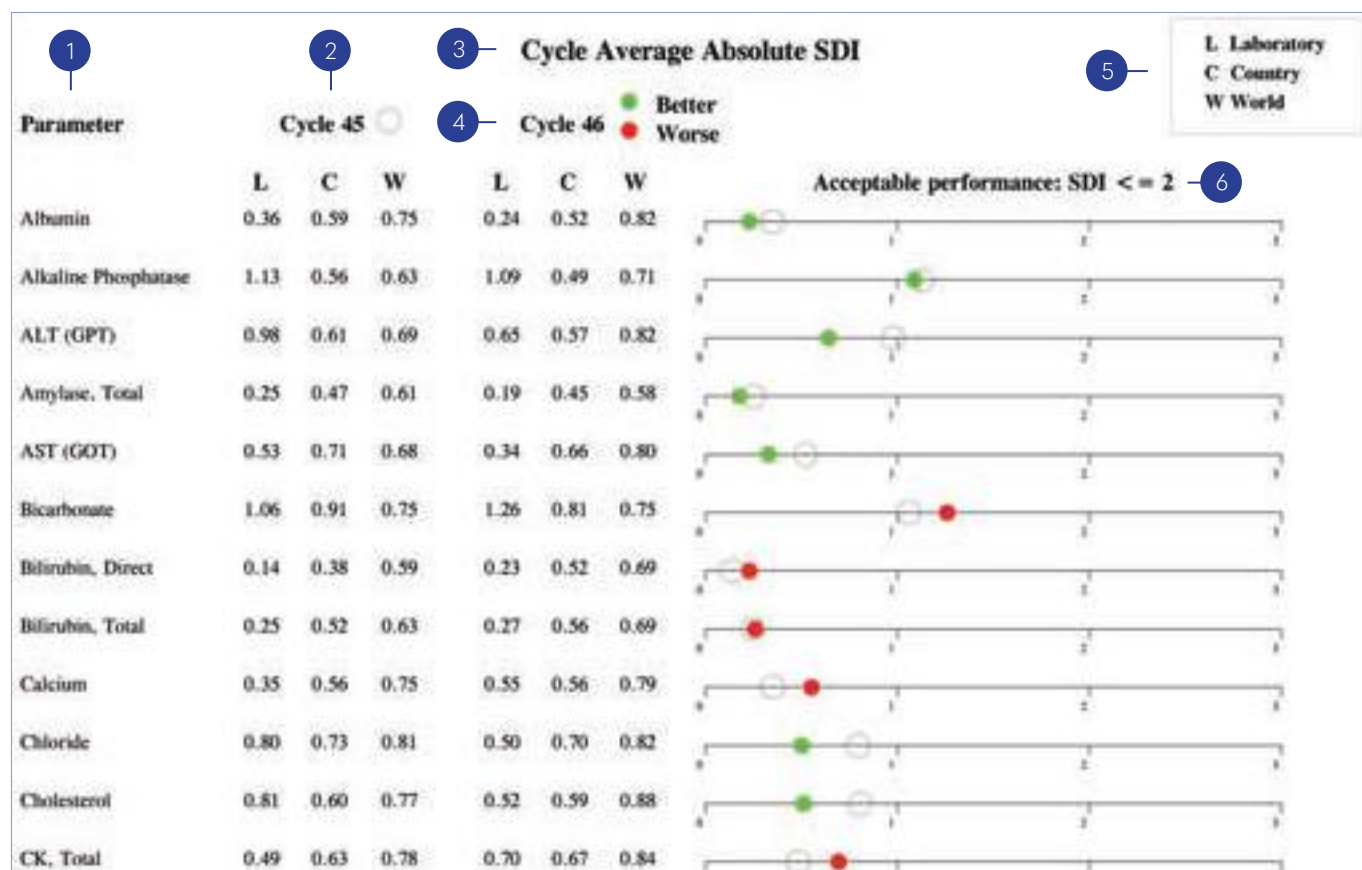


1	Levey-Jennings chart	Shows your SDIs for a full cycle.
		<ul style="list-style-type: none"> • Shows SDI (positive and negative) x Shows absolute SDI
2	Target Score chart	Shows your Target Scores for a full cycle.
3	%Deviation by sample chart	Shows your %Deviations for a full cycle.
		Acceptable limits equal to TDPA unless alternative limits are registered by the lab.
		<ul style="list-style-type: none"> • Shows %Deviation (positive and negative) x Shows absolute %Deviation
4	%Deviation by Concentration chart	Shows your results for a full cycle.

END-OF-CYCLE CURRENT ABSOLUTE SDI


Labcare

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



- 1 **Parameter list**
List of all parameters registered.
- 2 **Results for previous cycle**
Indicated by open circle on the chart.
- 3 **Report title - Cycle Average Absolute SDI**
This shows your performance this cycle compared to the previous cycle.
- 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.

END-OF-CYCLE CERTIFICATE OF PERFORMANCE Labcare

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 criterion. Any parameters not included on the Certificate of Acceptable Performance will be listed on the Notification of Unacceptable Performance.



RANDOX INTERNATIONAL QUALITY ASSESSMENT SCHEME

CERTIFICATE OF ACCEPTABLE PERFORMANCE

Laboratory Name
Laboratory Address
Country

1

2 — **LABORATORY REF. NO. III/A**

3 — **CLINICAL CHEMISTRY - CYCLE 66**

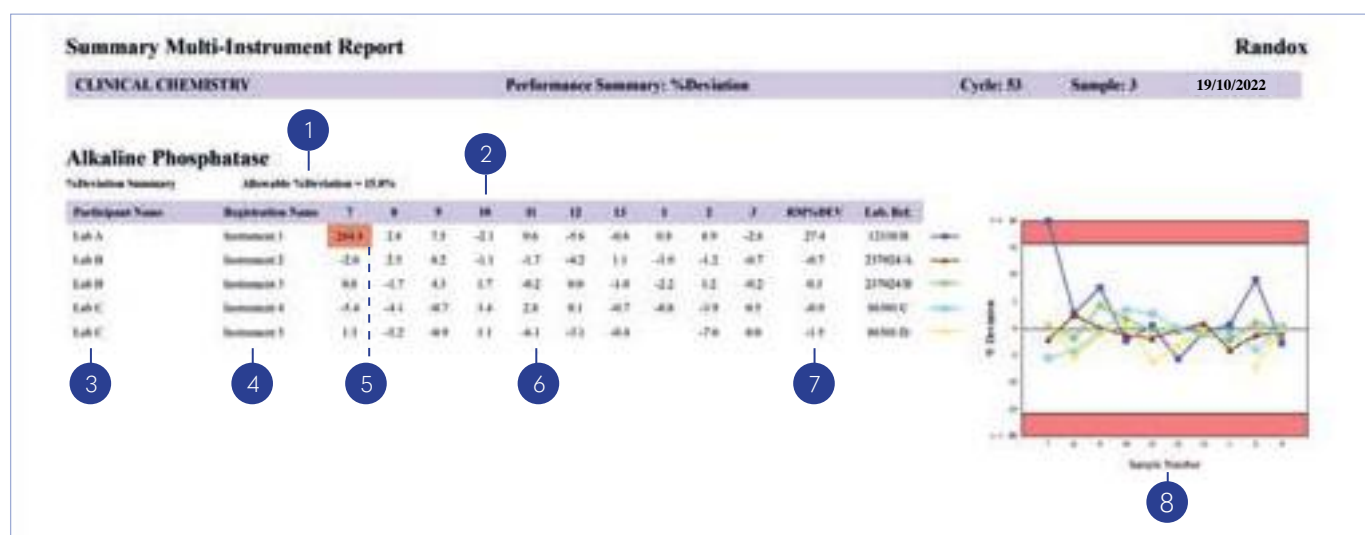
4 — **05/09/2022**

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 Green - Abbott Alinity i	1.61
Alkaline Phosphatase - AMP optimised to IFCC - Abbott Alinity c	0.80
ALT (GPT) - Tris buffer without P5P - Abbott Alinity c	1.20
Amylase, Total - Other 2-chloro-pNPG3 - Abbott Alinity c	0.99
AST (GOT) - Tris buffer without P5P - Abbott Alinity c	0.50
Bile Acids - Enzymatic Colorimetric - Abbott Alinity c	0.49
Bilirubin, Direct - Diazo with Dichloroaniline - Abbott Alinity c	0.36
Bilirubin, Total - Diazo with Dichloroaniline - Abbott Alinity c	0.72
Calcium - Arsenazo - Abbott Alinity c	0.69
Chloride - ISE, direct - Abbott Alinity c	1.08
Cholesterol - Cholesterol Oxidase - Abell Kendall - Abbott Alinity c	0.63
CK, Total - Abbott CK-NAC (IFCC) - Abbott Alinity c	0.47
Creatinine - Alkaline picrate no deproteinisation - Abbott Alinity c	1.42
GGT - Gamma glut.-3-carb.-4-nitro. - Abbott Alinity c	0.83
Glucose - Hexokinase - Abbott Alinity c	0.75

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 including the assay details for which cycle absolute SDI is < 2.
6	Average Absolute SDI	Your Cycle Average Absolute SDI.

Register up to five instruments per programme at no extra cost. In addition to a standard report for each instrument, a multi-instrument report is also provided allowing comparative performance assessment.



- | | | | |
|---|--|---|--|
| 1 | Allowable %deviation for the parameter in question, based on the RIQAS TDPA. | 5 | Poor performance. |
| 2 | Sample number. | 6 | %Deviation for each individual sample. |
| 3 | Lab name. | 7 | RM %Dev - Average of the last 10 %Dev for this parameter. |
| 4 | Unique instrument ID. | 8 | %Deviation chart comparing the performance of each instrument. |

URINE TOXICOLOGY REPORT



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

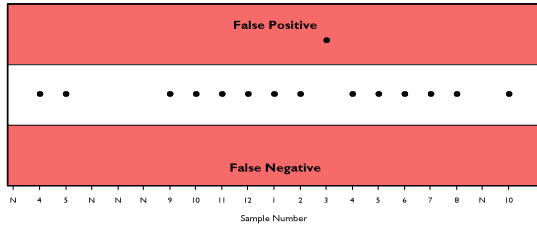
Screening Section

Quantitative Section

Amphetamines Group, ng/ml

Your Result Positive

Based on comparison value of 750
and your chosen cut-off value of 500
the correct response was Positive

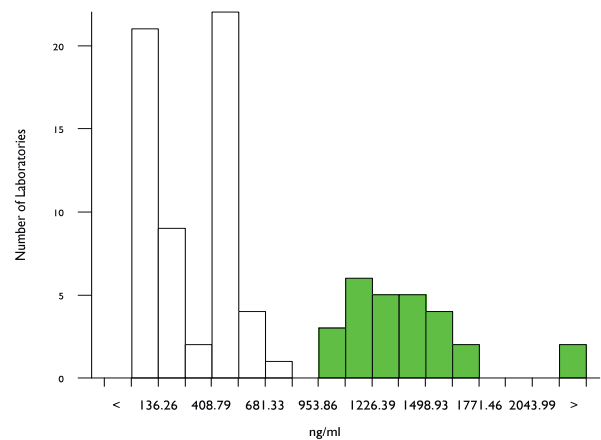


MDMA 750 ng/ml
Ethanol 62.5 mg/dl
EDDP 75 ng/ml
Free Morphine 1500 ng/ml
Nortriptyline 375 ng/ml

□ All Methods
■ KIMS

N	Mean	CV%	U _m	SDPA	Exc.
74	656.297	77.4	73.82	507.99	23
25	1344.540	15.1	50.82	203.30	2

▲ Your Result	1405.000	SDI	0.30
■ Mean for Comparison	1344.540	RMSDI	-0.12



	Cut-off	TN	TP	FN	FP	RC	NT	Total
Your Result	500	0	1	0	0	0	0	1
KIMS	500	0	21	0	0	0	0	21
	1000	0	0	0	9	0	0	9
	All	0	21	0	9	0	0	30
All Methods	150	0	1	0	0	0	0	1
	300	0	5	9	0	0	0	14
	500	0	32	49	0	0	0	81
	1000	65	0	0	10	0	3	78
	All	65	38	58	10	0	3	174
Competitive Antibody Binding	500	0	3	0	0	0	0	3
CEDIA	500	0	2	4	0	0	0	6
DRI-EIA	500	0	3	3	0	0	0	6
ELISA	500	0	0	1	0	0	0	1
EMIT	500	0	1	27	0	0	0	28
EMIT II+	500	0	0	8	0	0	0	8
Point of Care	500	0	0	5	0	0	0	5
Quidel Triage	500	0	2	1	0	0	0	3

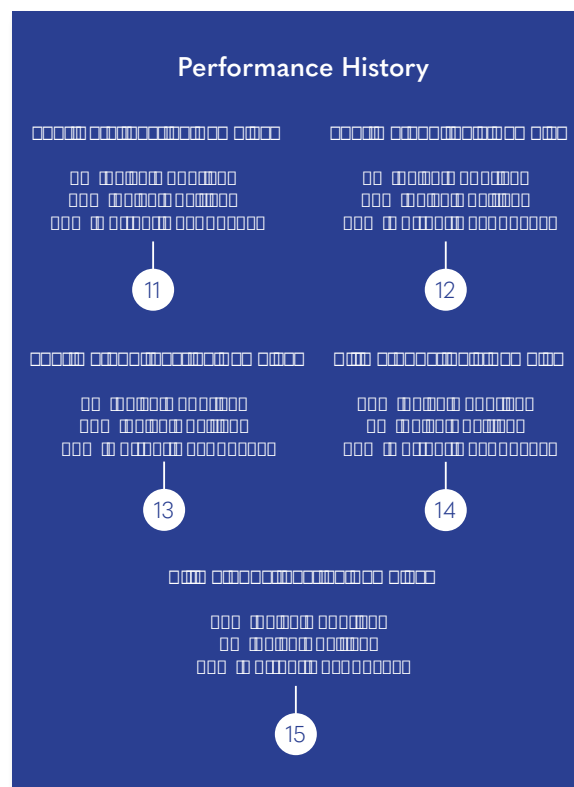
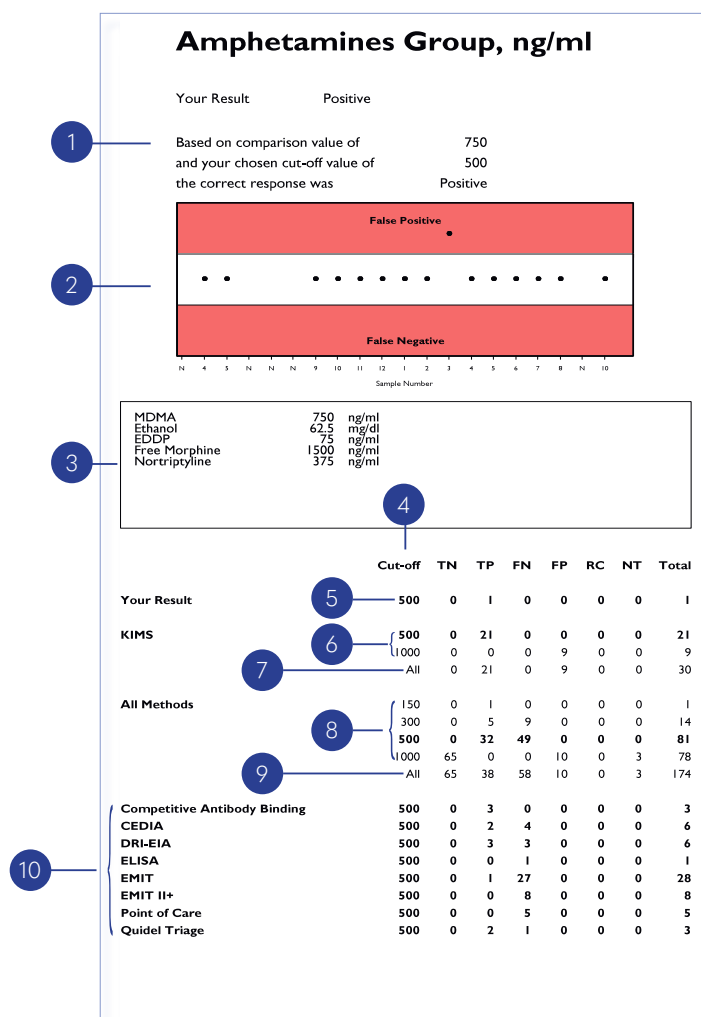
Method	N	Mean	CV%	U _m
EMIT	15	135.267	19.2	8.37
KIMS	25	1344.540	15.1	50.82
DRI-EIA	10	511.420	5.6	11.22
EMIT II+	5	119.540	22.4	14.98
CEDIA	5	298.942	89.9	150.22
Competitive Antibody Binding	4	540.725	2.7	9.19
ELISA	3	501.033	4.9	17.73

Performance History

Your Data (Last 10 Samples)	Your Method (This Sample)	Your Method (Last 10 Samples)	All Methods (This Sample)	All Methods (Last 10 Samples)
0 % False Negatives	0 % False Negatives	1 % False Negatives	34 % False Negatives	11 % False Negatives
10 % False Positives	30 % False Positives	11 % False Positives	6 % False Positives	5 % False Positives
90 % Correct Responses	70 % Correct Responses	88 % Correct Responses	60 % Correct Responses	83 % Correct Responses

URINE TOXICOLOGY REPORT SC Labcare

Qualitative comparison of screening results available for each parameter.

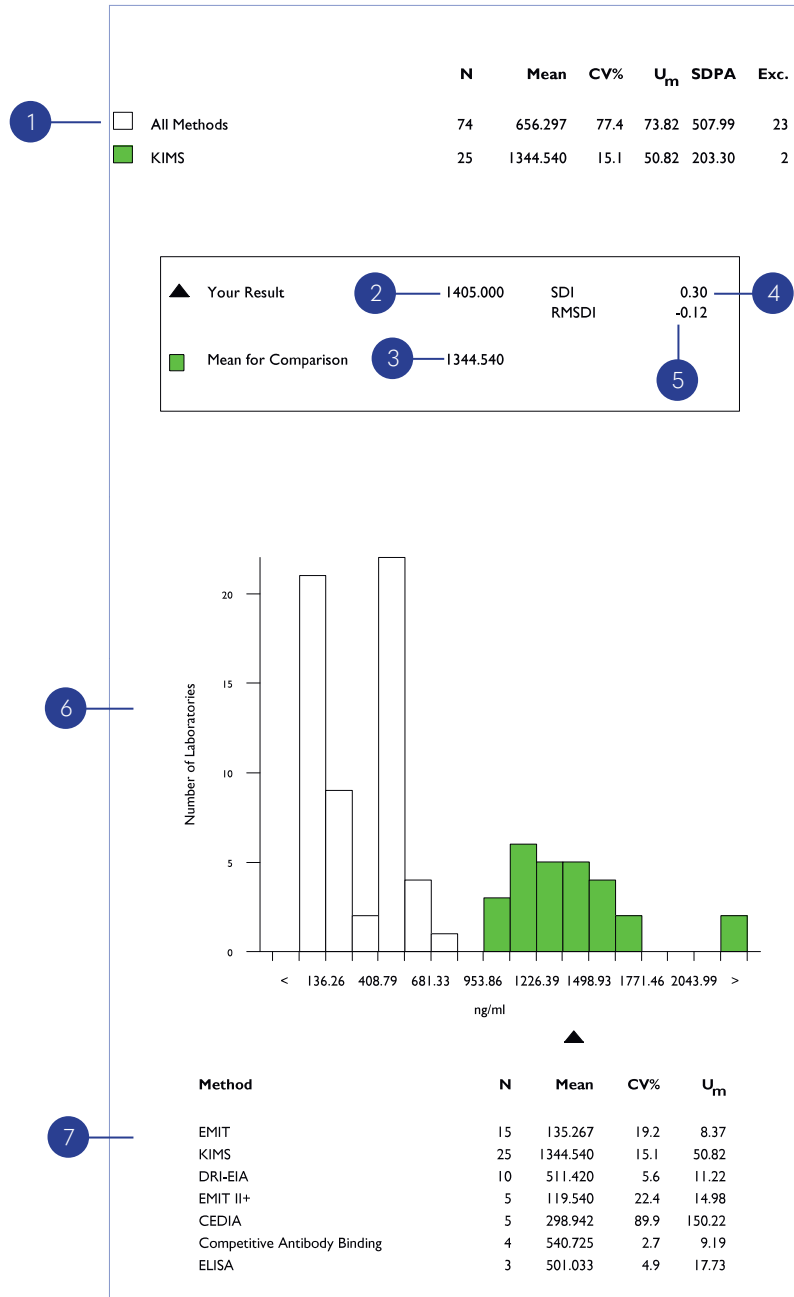


- Text section shows the correct response for the lab based on a comparison between the comparison value and the lab's cut off value.
- Screening Results:** This chart is a quick visualisation of your performance over the last 20 samples. A result in the white section indicates a correct response. A result in the upper red section indicates a False Positive response, and a result in the lower red section indicates a False Negative response.
- Comment section for RIQAS to provide your laboratory with additional relevant information regarding this sample, such as spiked metabolite concentration.
- 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
- Screening Summary:** Your screening result shown in the appropriate response category and your cut off for this sample.
- Screening results for all cut-offs returned for this sample within your method group.
- Total screening results over all cut-offs for your laboratory's method.
- Screening results for all cut-offs returned for this sample over all methods.
- Total screening results over all cut-offs for all methods.
- Screening results for other methods using same cut-off as your laboratory.
- Performance history for this parameter, based on previous 10 samples.
- Performance of your method over all cut-offs for this sample.
- Performance history of your method over all cut-offs, based on the previous 10 samples.
- Performance of all methods over all cut-offs for this sample.
- Performance history of all methods over all cut-offs, based on the previous 10 samples.

URINE TOXICOLOGY REPORT QUANTITATIVE



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** =

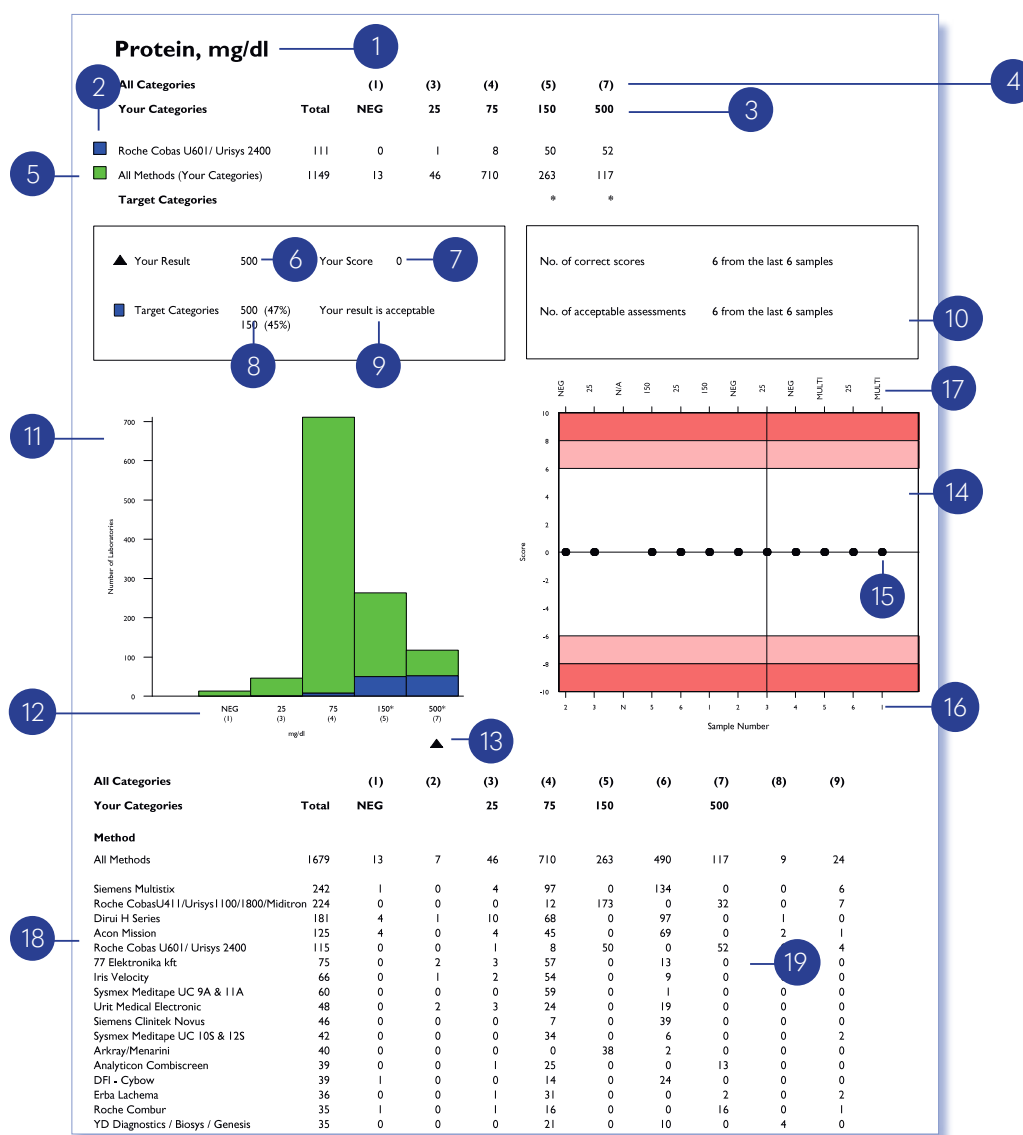
$$\frac{(\text{Your Result} - \text{Mean for Comparison})}{\text{SD of Mean for comparison}}$$

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.



- 1 Categories are stated in your unit.
- 2 Your method group.
- 3 Your categories (available result options for chosen test strip and unit).
- 4 All categories (result options) available for this parameter for any method (test strip).
- 5 Results from all methods (test strips) returning results in the same categories as your lab.
- 6 Your Result.
- 7 **Your Score:** Scores between 0-6 are acceptable, 7 borderline and 8-10 unacceptable.
- 8 Target categories and percentages of submitted results in that categories. Target categories are based on 80% consensus in the results in your categories. Multiple categories may be used to make up the 80% consensus. Target categories are highlighted by * in text section.
- 9 Performance Statement.
- 10 **Historical Performance:** Provides number of correct scores and acceptable assessments for the last 6 samples.
- 11 **Categories Histogram:** A quick visualisation of how your lab's result falls into the overall picture for your categories.
- 12 Possible reporting categories for your method. Target categories are highlighted by *.
- 13 Your result is indicated by the black triangle.
- 14 **Levey-Jennings type chart:** Acceptable scores (0-6) have no shading, borderline scores (7) have light red shading, unacceptable scores (8-10) have dark red shading.
- 15 Score for each sample number.
- 16 Sample Number.
- 17 **Target Categories:** If there was more than 1 target category assigned for a sample Multi is stated.
- 18 All methods reported for this parameter.
- 19 **Detailed summary of results:** This table enables you to see how you compare to all other results.

SEROLOGY REPORT



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

Anti-Rubella IgG, IU/ml

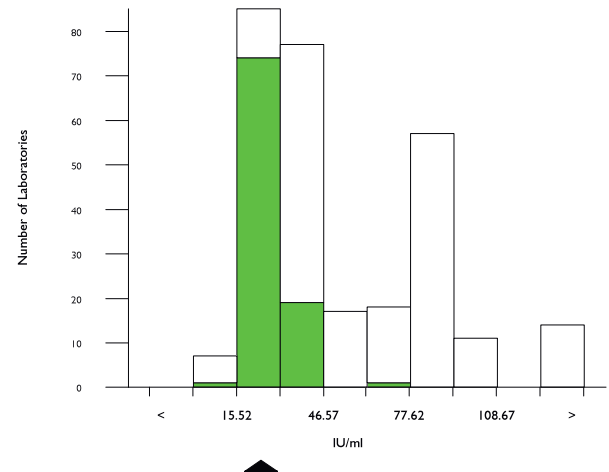
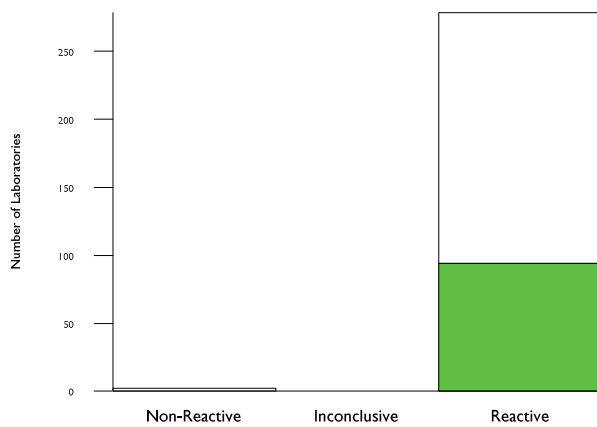
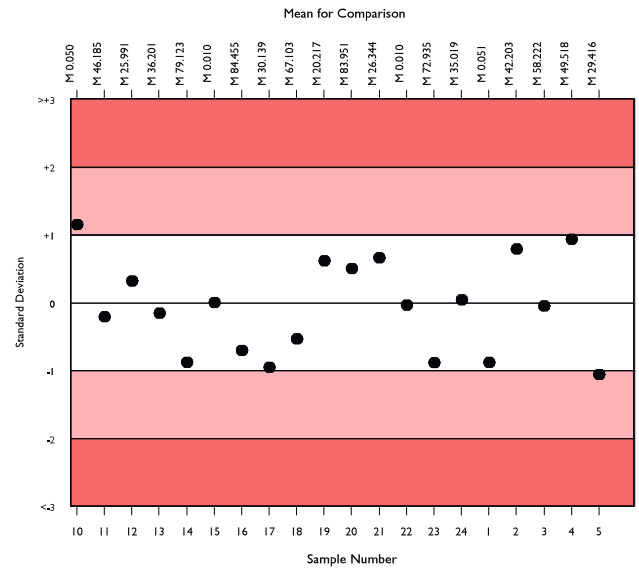
	N	Mean	CV%	U _m	SDPA	Exc.
All Methods	268	49.505	50.3	1.90	24.90	19
Abbott Architect/ Alinity	86	29.416	5.2	0.21	1.53	10

▲ Your Result	27.800	SDI	-1.06
Your Qualitative Result	Reactive	RMSDI	0.00
■ Mean for Comparison	29.416		

Your method: Abbott Architect/ Alinity
 Your result: Reactive
 Acceptable result (Method): Reactive

Overall results

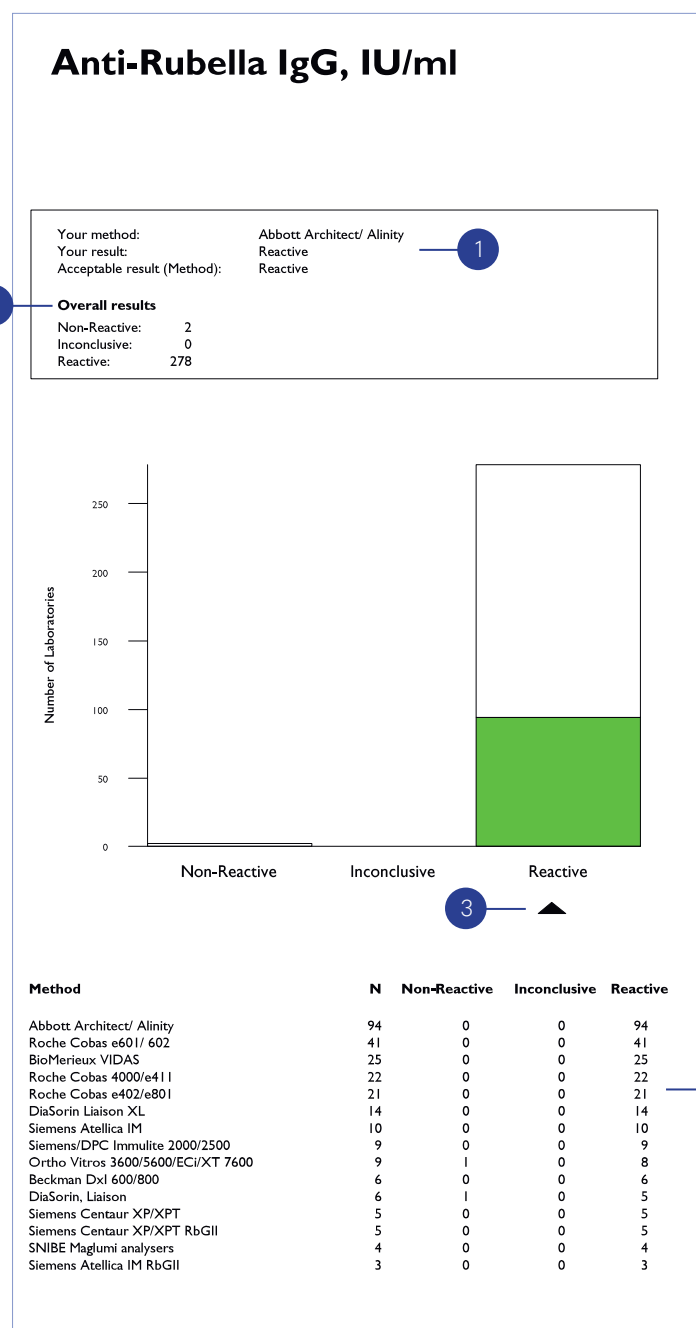
Non-Reactive: 2
 Inconclusive: 0
 Reactive: 278



Method	N	Non-Reactive	Inconclusive	Reactive
Abbott Architect/ Alinity	94	0	0	94
Roche Cobas e601/ 602	41	0	0	41
BioMerieux VIDAS	25	0	0	25
Roche Cobas 4000/e411	22	0	0	22
Roche Cobas e402/e801	21	0	0	21
DiaSorin Liaison XL	14	0	0	14
Siemens Atellica IM	10	0	0	10
Siemens/DPC Immulite 2000/2500	9	0	0	9
Ortho Vitros 3600/5600/ECi/XT 7600	9	1	0	8
Beckman Dxl 600/800	6	0	0	6
DiaSorin, Liaison	6	1	0	5
Siemens Centaur XP/XPT	5	0	0	5
Siemens Centaur XP/XPT RbGII	5	0	0	5
SNIBE Maglumi analysers	4	0	0	4
Siemens Atellica IM RbGII	3	0	0	3

Method	N	Mean	CV%	U _m
Abbott Architect/ Alinity	86	29.416	5.2	0.21
Roche Cobas e601/ 602	38	82.481	5.8	0.97
BioMerieux VIDAS	25	46.540	7.7	0.89
Roche Cobas 4000/e411	22	81.417	7.1	1.54
Roche Cobas e402/e801	21	92.786	5.0	1.26
DiaSorin Liaison XL	15	33.353	8.4	0.90
Siemens Atellica IM	9	225.947	10.8	10.19
Siemens/DPC Immulite 2000/2500	9	35.522	9.8	1.45
Ortho Vitros 3600/5600/ECi/XT 7600	8	49.850	14.4	3.18
Beckman Dxl 600/800	7	37.774	14.0	2.49
DiaSorin, Liaison	5	35.180	5.9	1.17
Siemens Centaur XP/XPT	3	283.233	12.0	24.50
Siemens Centaur XP/XPT RbGII	5	33.846	8.0	1.50
SNIBE Maglumi analysers	4	10.088	4.2	0.27
Siemens Atellica IM RbGII	3	34.117	3.5	0.87

Your performance for each sample is presented in a convenient single page per parameter report format.



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.

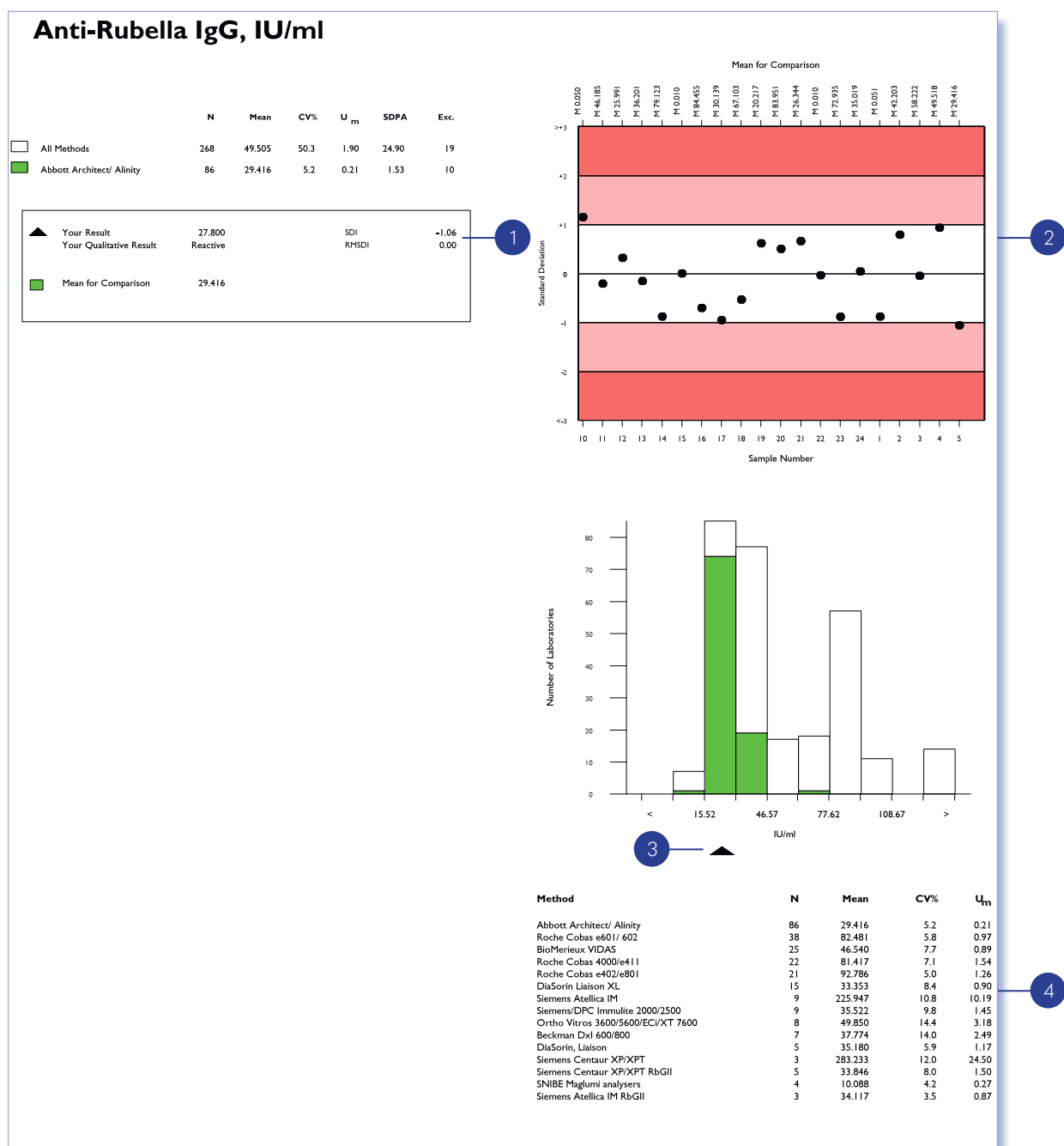
3 Your Result is shown as a black triangle on the category chart compared to other laboratories in groups:

All Methods  Your Method 

4 Summary shows performance of all the methods used to analyse the parameter.

SEROLOGY: SCREENING (QUANTITATIVE) Labcare

Your performance for each sample is presented in a convenient single page per parameter report format.



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

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

All Methods



Your Method



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

The RIQAS Serum Indices EQA programme is designed for the pre-analytical assessment of Haemolytic, Icteric and Lipemic (HIL) interferences. HIL parameters include the option of quantitative or semi-quantitative reporting. Interpretation of chemistry parameter results is also included for a number of parameters. The summary page collates the key information on both the quantitative and qualitative results for the HIL parameters.

Sample 1 - Normal Sample 2 - Haemolytic Sample 3 - Lipaemic					
Sample	Analyte	Mean for Comparison	Your Result	SDI	%DEV
1	Haemolytic Index	13.750	14.000	0.02	1.8
	Icteric Index	0.980	1.100	0.17	12.2
	Lipaemic Index	13.600	8.000	-0.83	-41.2
2	Haemolytic Index	469.000	500.000	0.34	6.6
	Icteric Index	2.475	<2.500		
	Lipaemic Index	40.000	45.000	1.23	12.5
3	Haemolytic Index	53.000	<50.000		
	Icteric Index	5.700	6.100	0.28	7.0
	Lipaemic Index	42.000	<40.000		

Sample	Analyte	Target Categories	Your Result	Your Score
1	Haemolytic Index	0	0	0
	Icteric Index	0	0	0
	Lipaemic Index	0	0	0
2	Haemolytic Index	4+ 5+	5+	0
	Icteric Index	0	0	0
	Lipaemic Index	0	1+	1
3	Haemolytic Index	0	0	0
	Icteric Index	2+	2+	0
	Lipaemic Index	0	0	0

1 The first section shows the status of each of the samples i.e. if the sample is a normal sample or if it is haemolytic, icteric or lipaemic.

2 The next section shows the summary of the quantitative results for the Serum Indices and your performance (SDI and %DEV) for each sample.

3 The final section shows the summary of the semi-quantitative results for the Serum Indices. This includes the target categories based off an 80% consensus in the results, your result and your score for each of the samples.

SERUM INDICES REPORT



The summary section is followed by report pages for the 3 serum indices parameters. There will be 3 pages for each index – one for each sample.

Quantitative Section

Semi-quantitative Section

Icteric Index, mg/dl

1

Sample 18 Icteric

	N	Mean	CV%	U _m	SDPA	Exc.
All Methods	77	11.036	7.5	0.12	0.82	7
Abbott Alinity	17	11.978	4.2	0.15	0.52a	1
Abbott Alinity c	17	11.978	4.2	0.15	0.52a	1

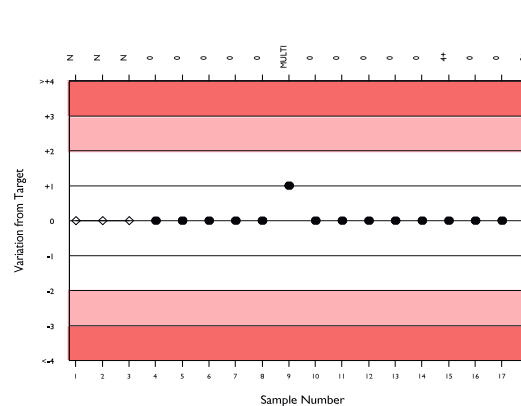
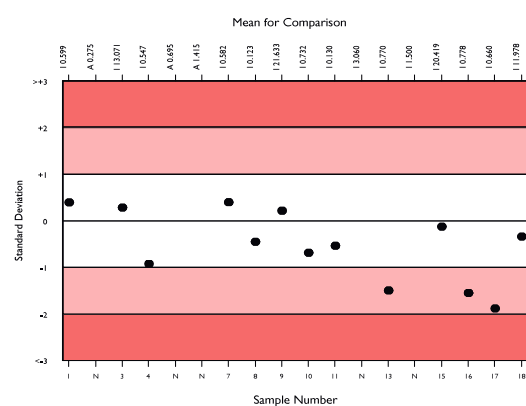
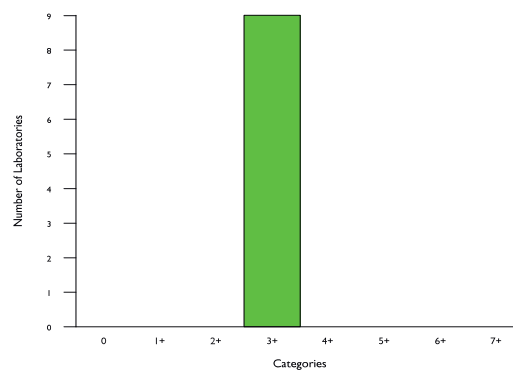
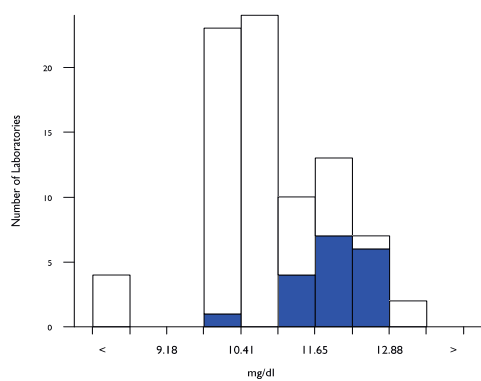
▲ Your Result	11.800	SDI	-0.34
■ Mean for Comparison	11.978	%DEV	-1.5

	0	1+	2+	3+	4+	5+	6+	7+
All Methods	2	1	7	18	1	0	1	0
IIAAC *	0	0	0	9	0	0	0	0

▲ Your Result 3+ Your Score 0

Target Categories 3+

* IIAAC = Abbott Alinity

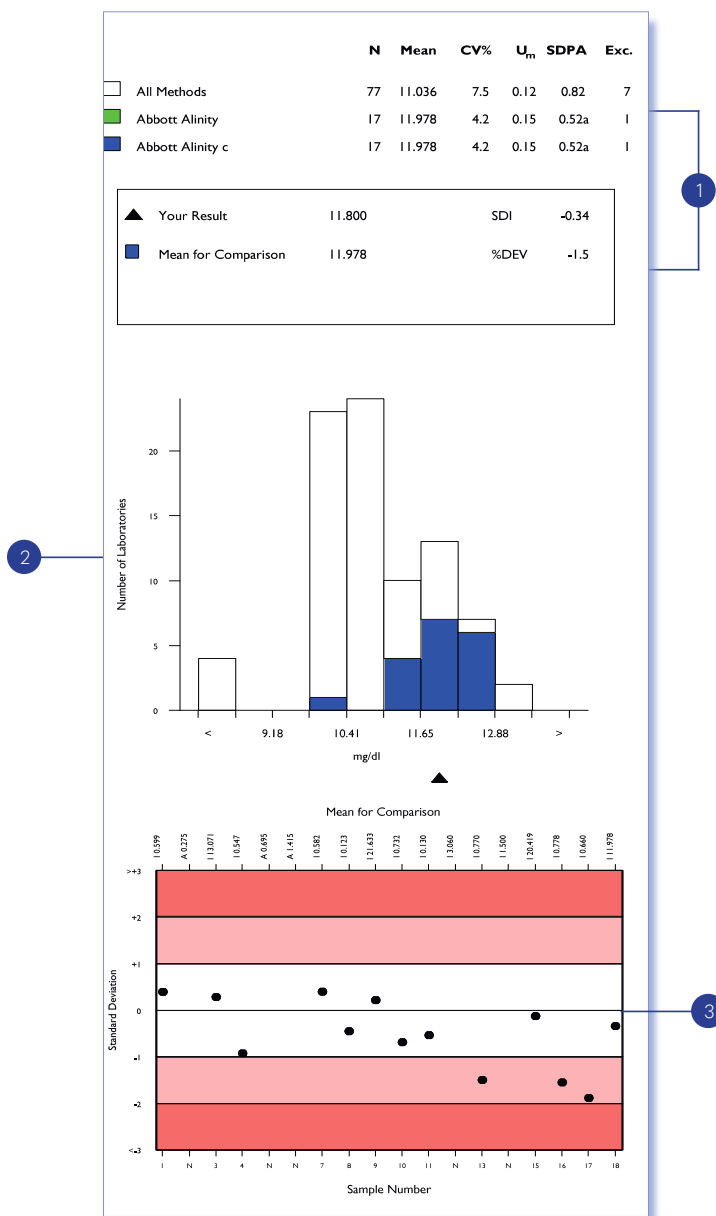


Under the Serum Index parameter name the report will display the sample status e.g. if the sample should be flagging as haemolytic, icteric or lipaemic. As with all reports, the results contained within the report pages will be in the unit selected by the lab during the registration process.

SERUM INDICES REPORT: QUANTITATIVE



Quantitative comparison of results available for each index.



1

Text Section: In the text section you will see the All method, method and instrument means for comparison in addition to the respective statistics. Below this you will see your result, your Mean for comparison and your performance (SDI and %DEV) for this specific sample. For samples which do not hit specific flags for the indices, a large proportion of analysers will have a less than (<) setting. On a RIQAS report these will be counted in the excluded column. As one sample in each distribution will be a normal sample, it is likely there will be a large number of (<) results returned for these samples so we are indicating in this section the percentage of results that have been returned as a < or > result to allow labs to see if the number of excluded results is high that there is an explanation for this.

2

Histogram: As with other RIQAS reports, this histogram shows an overview of the spread of the results that have been returned for each level of comparison (all method (white), method (green) and instrument (blue)). The lab's result is indicated by the black triangle at the bottom of the chart.

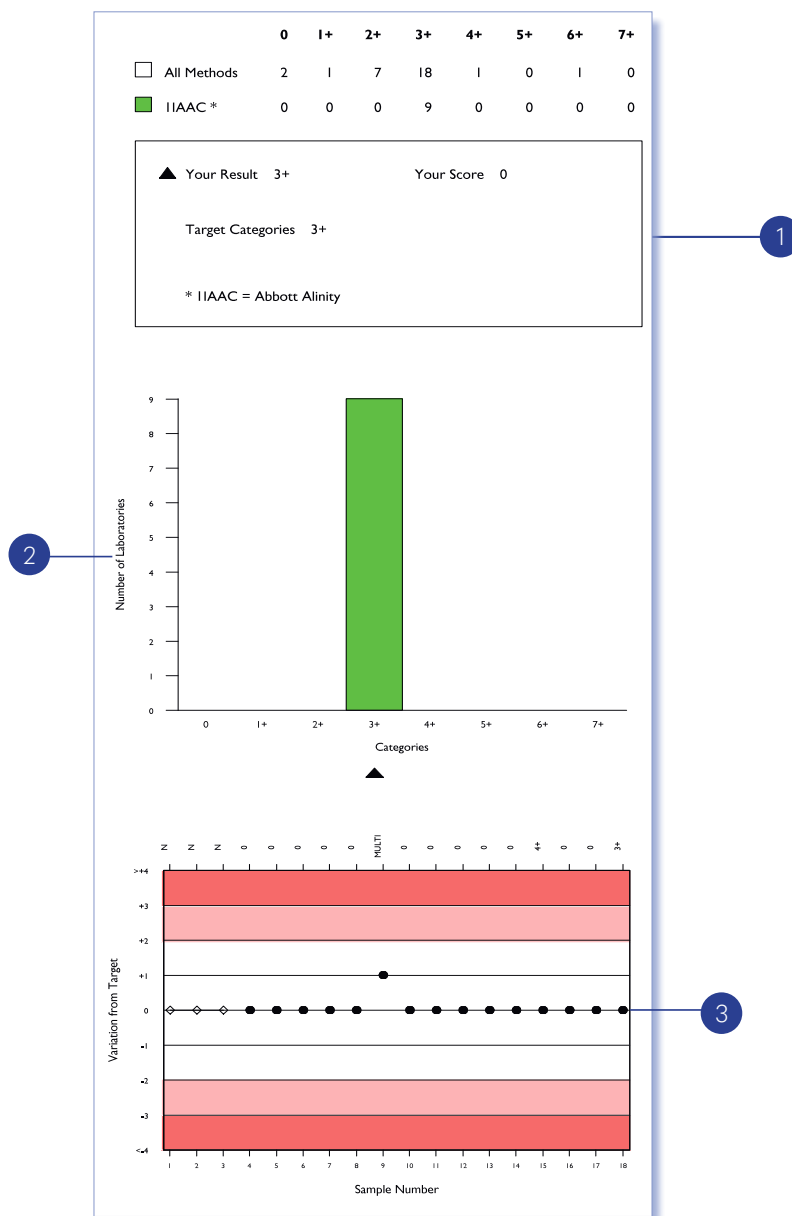
3

Levey Jennings style chart: The Levey Jennings chart will display the lab's SDIs. These reflect laboratory performance in relation to SDPAs and are useful to monitor performance over time. Acceptable performance is SDI < 2. The sample numbers will be displayed along the bottom of the chart and the Means for Comparison including the level will be displayed along the top of the report.

SERUM INDICES REPORT: SEMI-QUANTITATIVE



Semi-quantitative comparison of the results available for each parameter.



1

Text Section: This shows the breakdown of the semi-quantitative results returned – broken down by all methods and the labs chosen method. The method is displayed as a code, the description for which is found in the box just below containing the lab's result.

The lab's result, target categories (based on an 80% consensus), and the lab's score based on how many categories away from the target category the result is, are displayed below the breakdown of each category.

2

Histogram: The histogram shows a pictorial breakdown of the results returned for each category. The lab's result is indicated by the black triangle at the bottom of the chart.

3

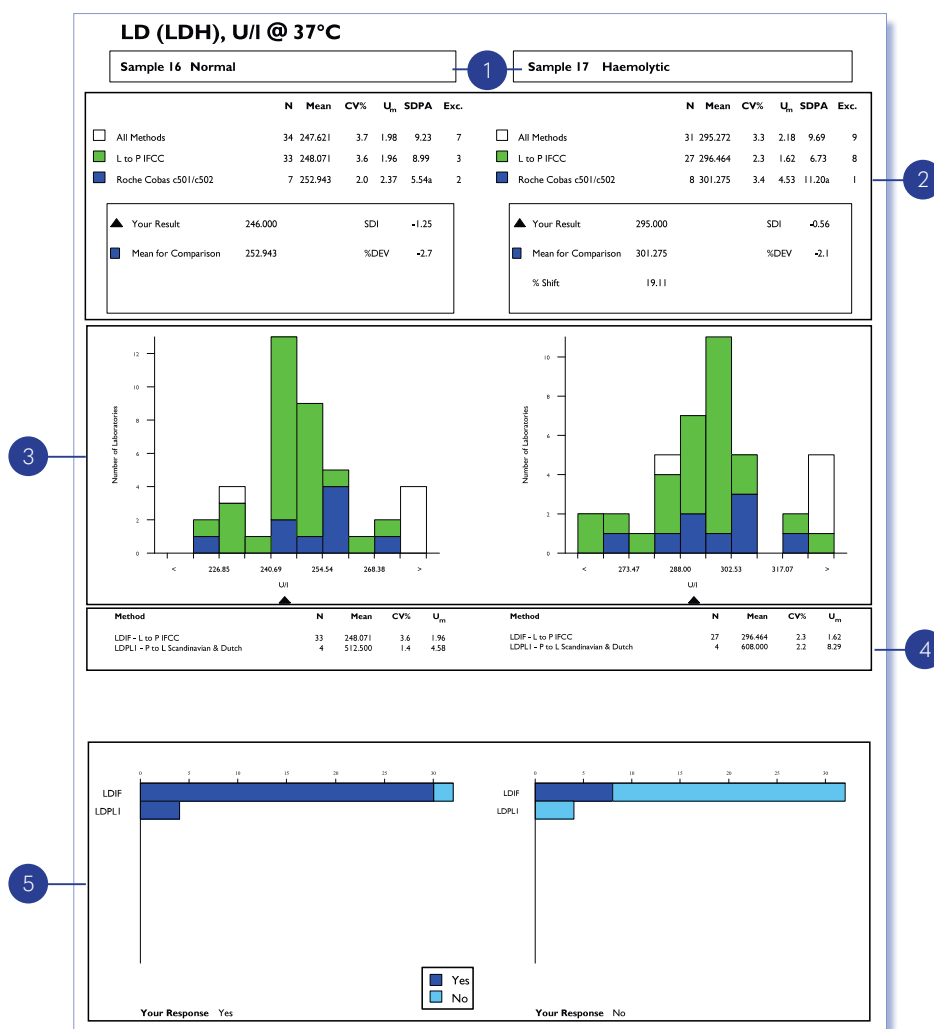
Levey-Jennings chart: This chart will display the lab's score or variation from the target category.

The sample numbers will be displayed along the bottom of the chart and the target categories along the top. If there is more than one target category, the chart will display the word 'Multi'.

SERUM INDICES REPORT: CHEMISTRY



Following the report pages for the 3 Serum Indices, there are the report pages for any chemistry parameters labs have registered for. There are 2 pages for each parameter, one showing the comparison between the first sample (the normal sample) and the second sample and the second page showing the comparison between the first and third sample respectively.



1 Sample Status: Under the chemistry parameter name the report will display the sample status e.g. if the sample should be flagging as haemolytic, icteric or lipaemic for the 2 samples being compared. As with all reports, the results contained within the report pages will be in the unit selected by the lab during the registration process.

The rest of the report page shows the same information for each of the 2 samples being compared.

The first sample of the 3 in each distribution will be the normal sample, the other 2 may or may not flag for one or more of the Indices.

2 Text Section: In the text section you will see the all method, method and instrument means for comparison and the respective statistics. Below this you will see you result, your Mean for comparison and your performance (SDI and %DEV) for this specific sample.

The % shift in the Means for Comparison between the normal and the affected sample is displayed in the results box for the second and third sample.

3 Histogram: As with other RIQAS reports, this histogram shows an overview of the spread of the results that have been returned for each level of comparison (all method (white), method (green) and instrument (blue)). The lab's result is indicated by the black triangle at the bottom of the chart.

4 Method Summary Section: As with other RIQAS reports, this section provides an easy way of assessing the performance of other methods used to analyse the parameter in question. The code at the beginning of the description is the key to the following section - Reporting of the Result based on Serum Indices flag.

5 Reporting of the Result based on Serum Indices flag: Depending on the Index that has been flagged, the lab may choose to not report the result to the clinician. In this section the lab can report on whether they would report the result for this parameter based on the result from the Serum Indices analysis.

BACTERIAL IDENTIFICATION REPORT



Presented in a convenient single report, all results for the current sample will be displayed within 6 sections.

Number of expected organisms in this sample: 1

Expected Organism: *Pseudomonas aeruginosa*

Your Result for this Organism: *Pseudomonas aeruginosa*

Result sent for referral (as per laboratory protocol)? No

Case study - A 41 year old fireman was badly burned during a house fire. This organism was cultured from his subsequently infected wound.

Current Performance

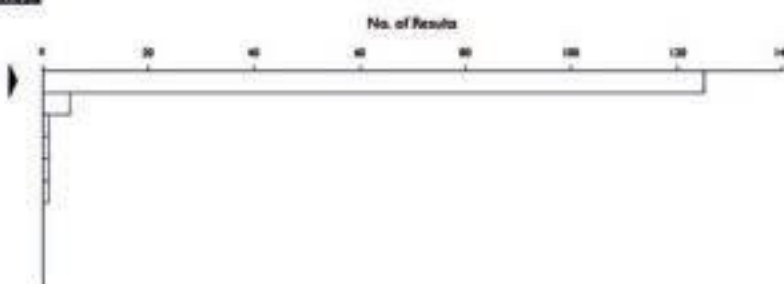
Your Score for this Organism: 3

	Correct Assessment (N)	Score Averages	
		Overall	Your Method
Global	125	2.84	2.76
Country	22	2.95	2.92

Organisms Reported

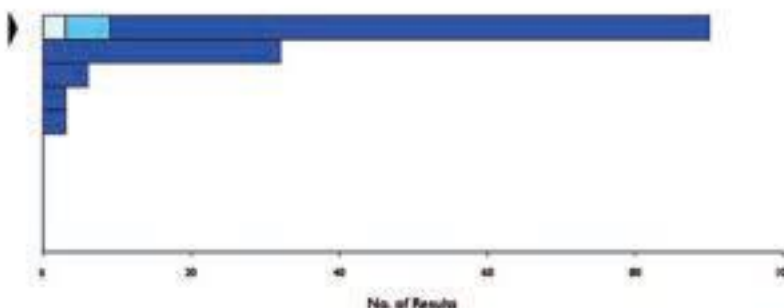
Expected Organism: *Pseudomonas aeruginosa*

Pseudomonas aeruginosa
Pseudomonas
Escherichia coli
Proteus
Pseudomonas fluorescens
Staphylococcus aureus



Methods in Use

Conventional tests
 VITEK 2 (all models)
 BD Phoenix (all models)
 MicroScan WalkAway
 Sensititre Aris 2X



Method

Incorrect Partial Correct

All Methods	3	6	125
Conventional tests	3 (3.3)	6 (6.7)	81 (90.0)
VITEK 2 (all models)	0 (0.0)	0 (0.0)	32 (100.0)
BD Phoenix (all models)	0 (0.0)	0 (0.0)	6 (100.0)
MicroScan WalkAway	0 (0.0)	0 (0.0)	3 (100.0)
Sensititre Aris 2X	0 (0.0)	0 (0.0)	3 (100.0)

BACTERIAL IDENT Labcare

Participants can quickly and easily identify their performance for the current sample against their peers across geographic locations and those utilising same methodologies. Each section is explained in further detail below.

1

Number of expected organisms in this sample: 1

Expected Organism:	<i>Pseudomonas aeruginosa</i>
Your Result for this Organism:	<i>Pseudomonas aeruginosa</i>
Result sent for referral (as per laboratory protocol)?	No

2

Case study - A 41 year old fireman was badly burned during a house fire. This organism was cultured from his subsequently infected wound.

3

Current Performance		Score Averages		
Your Score for this Organism:	3			
		Correct Assessment (N)	Overall	Your Method
Global		125	2.84	2.76
Country		22	2.95	2.92

1 Sample Results: This shows the expected organism, the labs selected organism and information on the laboratory protocol being followed. Information on the lab's protocol will have an effect on the scoring for this sample.

2 Case Study: Clinical details are provided for each sample.

3 Performance Scoring: This will contain the lab's specific score for this sample. It will also show the correct assessments and overall scoring with the lab's country and globally.

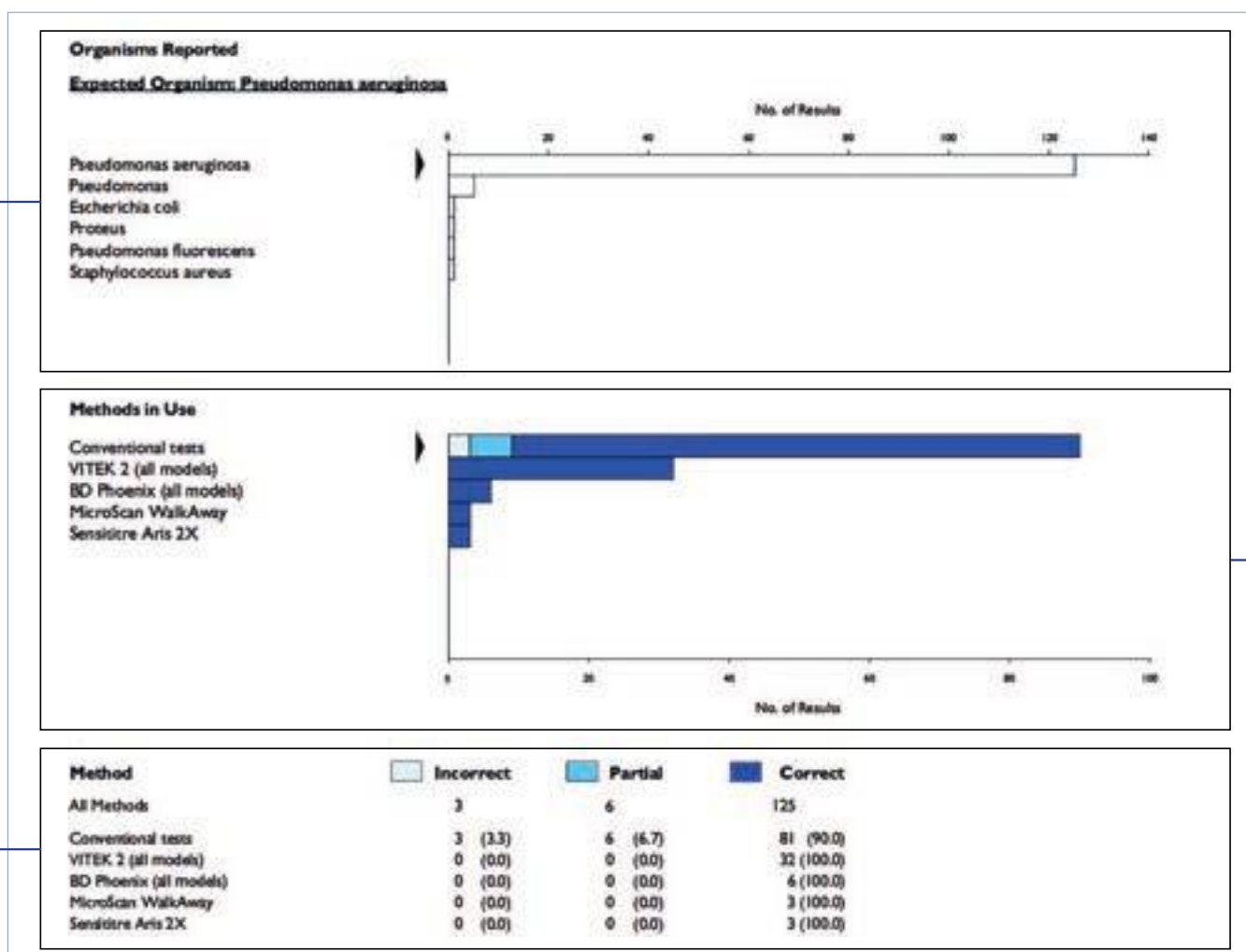
If sample is NOT sent for referral, scoring is marked out of 3

- Correct Genus + species = 3
- Correct Genus + species is blank, if this is lab protocol = 3
- Correct Genus + species is blank = 1
- Correct Genus + incorrect species = 1
- Incorrect Genus and species but correct Gram stain = 0
- Incorrect Genus, species and Gram stain = -1

If sample is sent for referral, scoring is marked out of 2

- Correct Genus + species = 2
- Correct Genus + species is blank, if this is lab protocol = 2
- Correct Genus + species is blank = 1
- Correct Genus + incorrect species = 1
- Incorrect Genus and species but correct Gram stain = 0
- Incorrect Genus, species and Gram stain = 0

BACTERIAL IDENTIFICATION REPORT



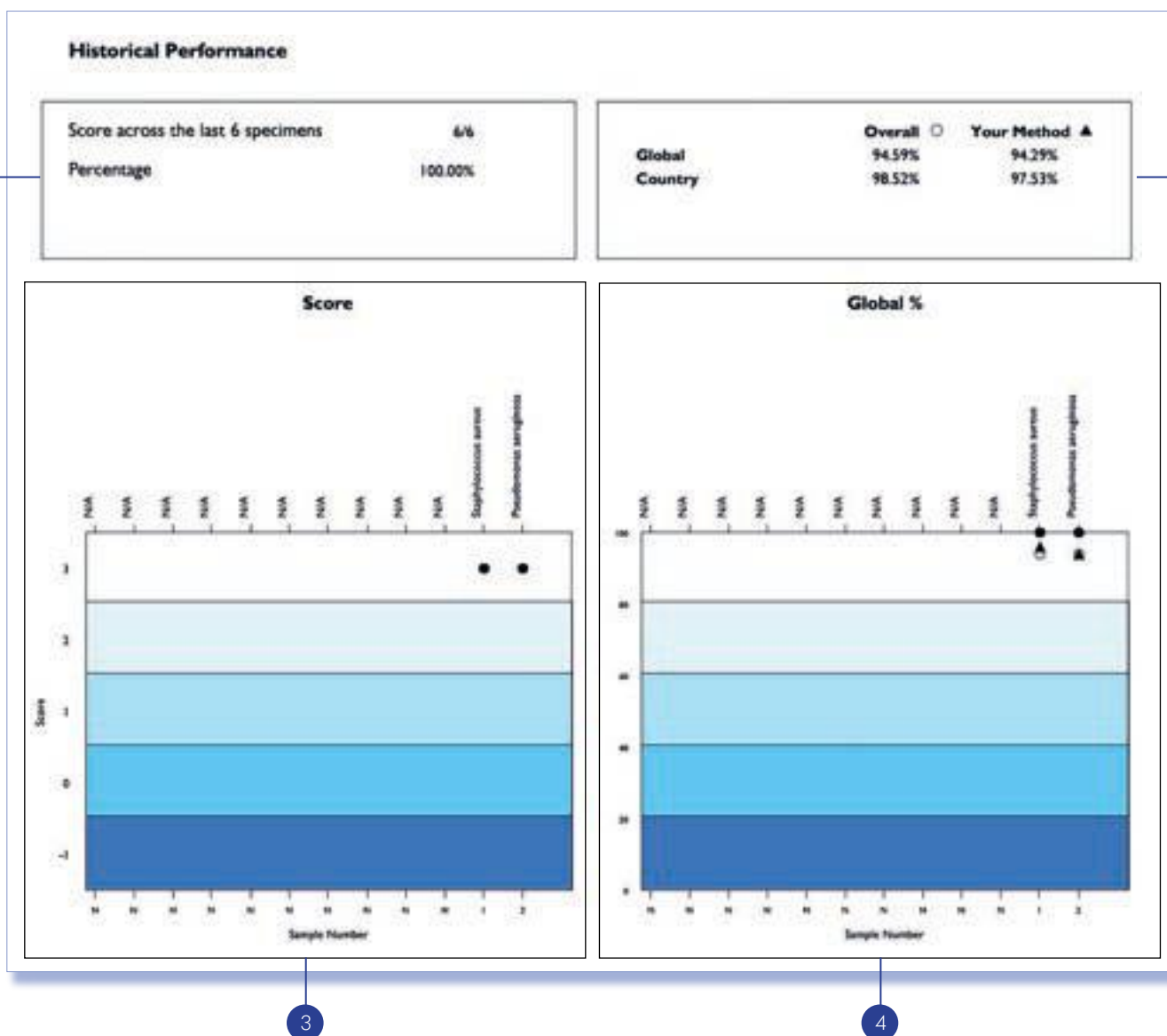
4 Bar Chart of Organisms Reported: This will list all organisms reported by each lab ordered in descending frequency. The black triangle indicates the lab's result.

5 Bar Chart Detailing Methods Used: This will list all methods used by each lab ordered in descending frequency. The bars are colour coded to highlight correct, partial and incorrect responses for each method. The black triangle indicates the lab's result.

6 Method Summary Section: This is a table providing the number of responses by method. The figures in brackets indicate the percentage of responses for each method.

BACTERIAL IDENTIFICATION - HISTORIC Labcare

Track your performance across the previous 12 specimens using this one-page report.



1 This shows the lab's score across the last 6 samples. This score is also shown as a percentage.

2 This shows the percentages for the lab's country and globally for the last 6 samples. This is broken down by the lab's method and all methods.

3 A chart showing the lab's historical performance score. The expected organism for each sample is displayed along the top of the chart.

4 A chart showing the percentages for the lab, their country and globally. Each plot is the percentage score for 6 rolling samples.

ANTIMICROBIAL SUSCEPTIBILITY TESTING Labcare

Antimicrobial susceptibility testing table details all reported antibiotics for current sample and AST response.

Antimicrobial Susceptibility Testing					
Organism: <i>Pseudomonas aeruginosa</i>					
Antibiotic	Resistant	Intermediate	Sensitive	Your Result (Score)	Target
Amikacin	2	2	107	Sensitive (2/2)	Sensitive (Y)
Amoxicillin	2	0	0		Too Few
Amoxicillin/Clavulanic Acid	2	0	0		Too Few
Ampicillin	6	0	1		Resistant (A)
Ampicillin/Sulbactam	1	0	1		Too Few
Azithromycin	0	1	0		Too Few
Aztreonam	1	9	15	Intermediate (N/A)	N/A
Cefazolin	3	1	0		Too Few
Cefepime	2	25	68	Intermediate (2/2)	Intermediate (Y)
Cefixime	2	0	0		Too Few
Cefodime	0	2	3		Too Few
Cefoperazone	0	0	1		Too Few
Cefoperazone/Sulbactam	0	0	1		Too Few
Cefotaxime	8	0	0		Resistant (A)
Cefoxitin	1	0	1		Too few
Cefpodoxime	1	0	1		Too Few
Ceftazidime	1	29	80	Intermediate (1/2)	Sensitive (A)
Ceftazidime/Avibactam	0	0	5		Sensitive (A)
Ceftolozane/Tazobactam	0	1	6		Sensitive (A)
Ceftriaxone	2	0	0		Too Few
Cefuroxime	3	0	0		Too Few
Ciprofloxacin	0	33	85	Intermediate (2/2)	Intermediate (Y)
Clindamycin	0	0	1		Too Few
Colistin	1	6	17		Sensitive (Y)
Cotrimoxazole	1	0	0		Too few
Doripenem	0	0	6		Sensitive (A)
Doxycycline	1	0	0		Too few
Ertapenem	2	0	0		Too few
Erythromycin	0	0	1		Too few
Fosfomycin	4	0	0		Too few
Gentamicin	6	5	80	Sensitive (2/2)	Sensitive (Y)
Imipenem	13	27	57	Intermediate (2/2)	Intermediate (Y)
Levofloxacin	3	15	25	Intermediate (N/A)	N/A

- Target based on 80% agreement or at least 30% more than next common response
- Target requires at least 5 responses or else 'Too Few' is recorded
- Target is based initially on lab's guideline (Y) followed by all guidelines (A) if lab's guideline does not fulfil criteria. If neither of these are met then target recorded as N/A
- Participant responses are recorded for each antibiotic
- Participant responses from an incorrectly or partially identified organism are not included in totals

Scoring

- **If target is Sensitive**
Response of sensitive = 2
Response of intermediate = 1
Response of resistant = 0
- **If target is Resistant**
Response of sensitive = -1
Response of intermediate = 1
Response of resistant = 2

- **If target is Intermediate**
Response of sensitive = 1
Response of intermediate = 2
Response of resistant = 1
- **No scoring possible if target is N/A or Too Few**

ANTIMICROBIAL SUSCI Labcare

Antimicrobial susceptibility testing table details all reported antibiotics for current sample and AST response.

1

Ticarcillin/Clavulanic Acid	0	7	1	Intermediate (2/2)	Intermediate (A)
Tigecyclin	11	0	0		Resistant (A)
Tobramycin	1	0	53	Sensitive (2/2)	Sensitive (Y)
Trimethoprim/Sulfamethoxazole	6	2	1		N/A
Vancomycin	0	0	1		Too Few

Your Score	19 out of 20	95.0%
Your Guideline: EUCAST	350 out of 456	76.8%
All Guidelines	1755 out of 2048	85.7%

3 of your antibiotics have no target and are not scored

1 Scoring Summary

- A total score for the participants responses that had targets is provided for the participant

Your Score

- A total score for all antibiotics that had targets is provided for

Your Guideline

All Guidelines

Cefepime				
Guideline	Resistant	Intermediate	Sensitive	% Agreement
CLSI	0	0	31	100.0%
EUCAST	1	16	7	66.7%
Unspecified	1	9	30	75.0%

2 Guideline Analysis

- For each antibiotic that has a target assigned, a breakdown of the responses per guideline is provided

MONITORING EQA PERFORMANCE



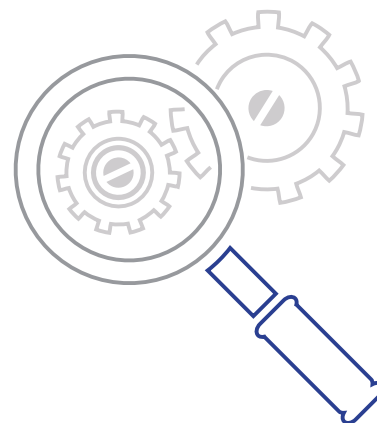
Each EQA report should be evaluated and any poor performance investigated. A step by step approach should be adopted consisting of the following three steps:

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.

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.



Clerical errors

- Transcription errors
- Incorrect units used
- Incorrect sample tested
- Incorrect method classification
- Calculation/conversion error

Systematic errors

- Sample/Reagent prep/handling
- Reagent/calibrator/standardisation change
- Instrument/reagent/calibrator fault
- Inexperienced operators
- Reagent deterioration
- Inappropriate method

Random errors

- Bubbles in reagent
- Bubbles in reagent/sample pipette
- Temperature fluctuations
- Poor pipetting technique
- Poor operator technique

The flowchart (page 29) is designed to help you investigate any apparent poor performance.

2. Implement corrective actions

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:

- Perform instrument maintenance
- Review reagent/sample storage
- Prepare fresh reagents & re-run sample
- Recalibrate instrument
- Check pipettes
- Perform staff training

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.

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: Sample Number:
 Analysis Date: Analyte:
 Mean for Comparison: Lab Result: SDI: %Dev:

1. Specimen Handling

- | | | | |
|--|---|--|---|
| a. Samples received in good condition | <input type="radio"/> Y <input type="radio"/> N | e. Error due to imprecision; check IQC in terms of | |
| b. Samples stored/prepared appropriately | <input type="radio"/> Y <input type="radio"/> N | %Deviation compared to deviation observed in EQA | <input type="radio"/> Y <input type="radio"/> N |
| c. Integrity of the sample is acceptable | <input type="radio"/> Y <input type="radio"/> N | f. IQC target correctly assigned | <input type="radio"/> Y <input type="radio"/> N |

2. Clerical

- | | | | |
|---|---|-------------------------------------|---|
| a. Correct result entered | <input type="radio"/> Y <input type="radio"/> N | 5. Calibration | |
| b. Correct use of decimal point and units | <input type="radio"/> Y <input type="radio"/> N | a. Date of last calibration | <input type="text"/> |
| c. Calculations, if any, performed correctly
(even if automated) | <input type="radio"/> Y <input type="radio"/> N | b. Calibration frequency acceptable | <input type="radio"/> Y <input type="radio"/> N |
| d. Conversion factors applied to results before submission | <input type="radio"/> Y <input type="radio"/> N | c. Last calibration acceptable | <input type="radio"/> Y <input type="radio"/> N |

3. Registration and Mean for Comparison

- | | | | |
|---|---|---|---|
| a. Registered in the correct method/instrument group | <input type="radio"/> Y <input type="radio"/> N | 6. Instrument | |
| b. Changed method or instrument without advising RIQAS | <input type="radio"/> Y <input type="radio"/> N | a. Daily maintenance performed on date of sample analysis | <input type="radio"/> Y <input type="radio"/> N |
| c. Peer Group changed due to the number of participants
returning results e.g. from method to instrument | <input type="radio"/> Y <input type="radio"/> N | b. Special maintenance performed prior to sample analysis | <input type="radio"/> Y <input type="radio"/> N |
| d. An obvious bias between method and instrument means
(check histogram and stats sections) | <input type="radio"/> Y <input type="radio"/> N | c. Instrument operated correctly | <input type="radio"/> Y <input type="radio"/> N |
| | | d. Operator fully trained | <input type="radio"/> Y <input type="radio"/> N |

4. Internal Quality Control

- | | | | |
|---|---|--|---|
| a. %Deviation of IQC (at similar conc to that of EQA) on
sample analysis date acceptable | <input type="radio"/> Y <input type="radio"/> N | 7. Reagents | |
| b. Shift in IQC in the periods just before and after EQA
sample analysis | <input type="radio"/> Y <input type="radio"/> N | a. Reagents prepared and stored correctly | <input type="radio"/> Y <input type="radio"/> N |
| c. Trends in IQC in the periods before and after EQA
sample analysis | <input type="radio"/> Y <input type="radio"/> N | b. Reagents within open vial stability | <input type="radio"/> Y <input type="radio"/> N |
| d. Random IQC variation on sample analysis date | <input type="radio"/> Y <input type="radio"/> N | 8. EQA sample | |
| | | a. Initial value | <input type="text"/> |
| | | b. Re-run value | <input type="text"/> |
| | | c. Issue observed in previous EQA samples at a similar
concentration (check %Deviation by concentration and
Levey Jennings charts) | <input type="radio"/> Y <input type="radio"/> N |
| | | d. All parameters affected (to the same extent) - possible
reconstitution error (check %Deviation on summary pages) | <input type="radio"/> Y <input type="radio"/> N |

Conclusion:

Remedial Action:

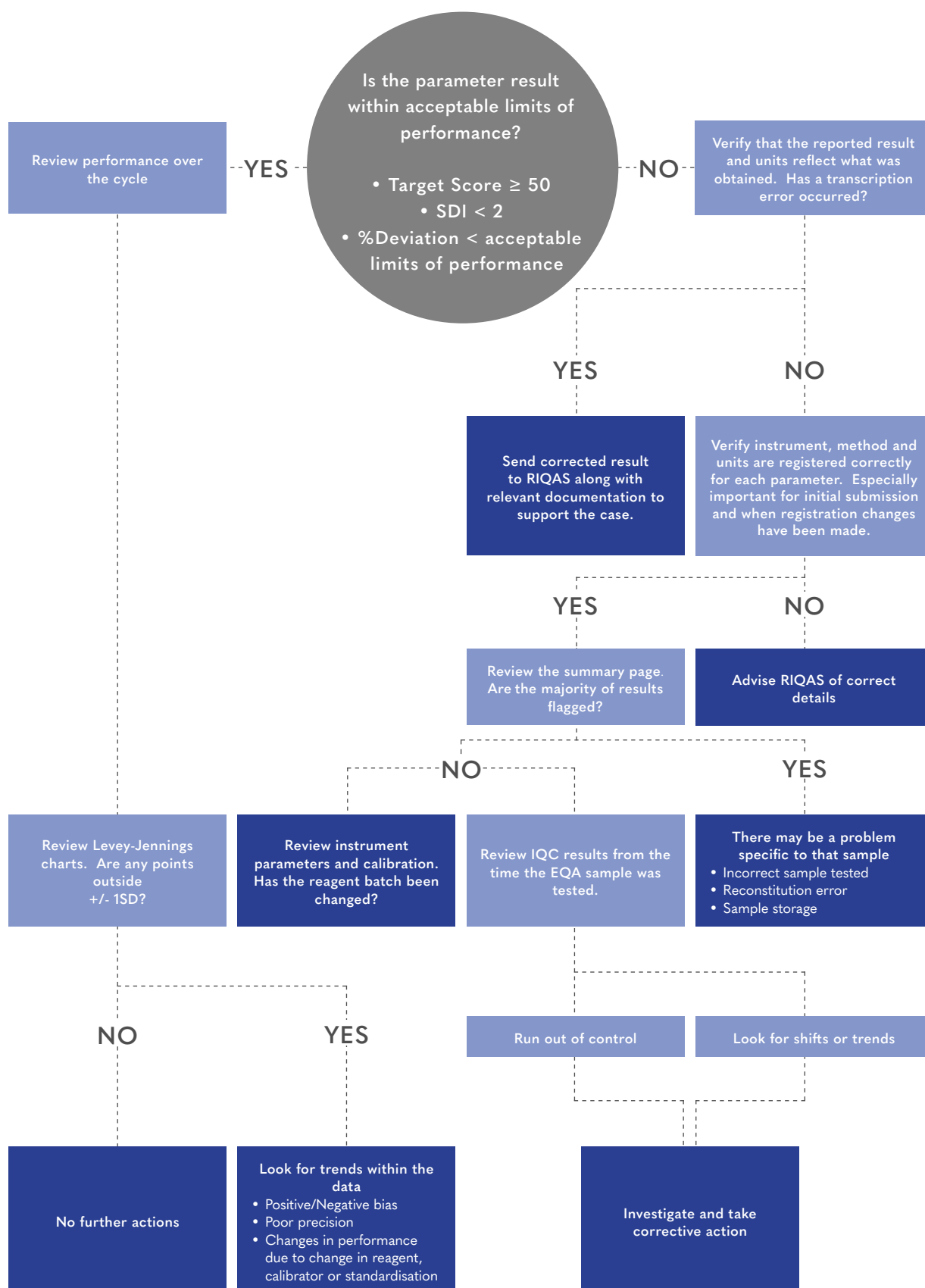
Lab Manager: Date:

Lab Director: Date:

MONITORING EQA PERFORMANCE



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



Ammonia/Ethanol Programme *With target scoring*



RQ9164 (2 ml)
2 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

Ammonia

Ethanol

Anti-Müllerian Hormone (AMH) Programme+



RQ9198 (1 ml)
1 Parameter
Samples every month, 1 x 12 month cycle, 12 month subscription

Anti-Müllerian Hormone (AMH)

Anti-TSH Receptor Programme+ *With target scoring*



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

Anti-TSH Receptor (TRAb)

Blood Gas Programme *With target scoring*



RQ9134 (1.8 ml) First registered instrument 11 Parameters Samples every month, 1 x 12 month cycle, 12 month subscription	RQ9134/A (1.8 ml) Subsequent instruments 11 Parameters Samples every month, 1 x 12 month cycle, 12 month subscription
---	--

Bicarbonate
Ca++
Cl-

CO₂ (Total)
Glucose
Lactate

K+
Na+
pCO₂

pH
pO₂

BNP Programme+ *With target scoring*



RQ9165 (1 ml)
1 Parameter
Samples every month, 1 x 12 month cycle, 12 month subscription

BNP

Cardiac Programme *With target scoring*



RQ9127/a (1 ml) 2 Parameters only (choose from 7) Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription	RQ9127/b (1 ml) Full 7 Parameters Samples every month, 1 x 12 monthly cycle, 12 month subscription	RQ9186 (1 ml) Full 7 Parameters Samples every month, 1 x 12 monthly cycle, 12 month subscription
--	--	--

CK, Total
CK-MB (Activity)

CK-MB (Mass)
Homocysteine

Myoglobin
Troponin I

Troponin T

Cardiac Plus Programme *With target scoring*



RQ9190 (3 ml)
11 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

CK, Total
CK-MB Activity
CK-MB Mass

D-dimer
Digoxin
Homocysteine

hsCRP
Myoglobin
NT proBNP

Troponin I
Troponin T

Cerebrospinal Fluid Programme+ *With target scoring*



RQ9168 (3 ml)
7 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

Albumin
Chloride

Glucose
IgG

Lactate
Protein (Total)

Sodium

RIQAS PROGRAMMES



Coagulation Programme *With target scoring*

RQ9135/a (1 ml)
5 Selected parameters only + 1 pilot
(aPTT, PT, TT, Fibrinogen, Antithrombin III)
Samples every month, 1 x 12 month cycle, 12 month subscription

aPTT
PT (including INR)
TT
Fibrinogen
Antithrombin III

RQ9135/b (1 ml)
Full 16 Parameters + 1 pilot
D-dimer*
Factor II
Factor V
Factor VII
Factor VIII

Factor IX
Factor X
Factor XI
Factor XII
Plasminogen

Protein C
Protein S

CO-Oximetry Programme+

RQ9177 (1.2 ml)
First registered instrument
7 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

Carboxyhaemoglobin (COHb / HbCO)
Deoxyhaemoglobin (HHb)

RQ9177/A (1.2 ml)
Subsequent instruments
7 Parameters
Methaemoglobin (MetHb)
Oxygen Content (O2CT)

Oxygen Saturation (sO2 / Vol O2)
Oxyhaemoglobin (O2Hb / HbO2)

Total Haemoglobin (tHb)

CYFRA 21-1 Programme+

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

CYFRA 21-1 (Cytokeratin 19)

Cytokines Programme+

RQ9195 (1 ml)
1 Parameter + 11 pilots
Samples every month, 1 x 12 month cycle, 12 month subscription

Epidermal Growth Factor (EGF)*
Interleukin – 1 alpha (IL-1α)*
Interleukin – 1 beta (IL-1β)*
Interleukin – 2 (IL-2)*

Interleukin – 4 (IL-4)*
Interleukin – 6 (IL-6)
Interleukin – 8 (IL-8)*
Interleukin – 10 (IL-10)*

Interferon gamma (INF-γ)*
Monocyte Chemoattractant Protein -1 (MCP-1)*
Tumour Necrosis Factor alpha (TNF-α)*

Vascular Endothelial Growth Factor (VEGF)*

ESR Programme+

RQ9163 (4.5 ml)
1 Parameter
2 samples per quarterly distribution, 1 x 12 month cycle, 12 month subscription

ESR (Erythrocyte Sedimentation Rate)

General Clinical Chemistry Programme *With target scoring*

RQ9112/a (5 ml)
10 Parameters

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

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

RQ9112/b (5 ml)
17 Parameters

Calcium, Adjusted
Calcium (Ionised)
Chloride
Cholesterol
Cholinesterase
CK, Total (CPK)
Copper
Creatinine
D-3-Hydroxybutyrate
eGFR (estimated glomerular filtration rate)
Fructosamine
γGT
GLDH
Glucose

RQ9112/c (5 ml)
Full 56 Parameters

HBDH
HDL-Cholesterol
Iron
Lactate
LD (LDH)
LDL-Cholesterol
Lipase
Lithium
Magnesium
NEFA
Non-HDL Cholesterol
Osmolality
Phosphate (Inorganic)
Potassium

RQ9128 (5ml)
Full 56 Parameters

Samples every month, 1 x 12 monthly cycle, 12 month subscription

Protein (Total)
PSA
Sodium
TIBC
T₃ (Free)
T₃ (Total)
T₄ (Free)
T₄ (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

HbA1c

Total Haemoglobin

= Liquid ready-to-use samples

= Lyophilised samples

PURPLE = The only parameters available on RQ9135/a

+ = Not accredited

* = Pilot study ongoing

Haematology Programme *With target scoring*

RQ9118 (2 ml)
11 Parameters

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

Haematocrit (HCT)
Haemoglobin (Hb)
Mean Cell Haemoglobin (MCH)

Mean Cell Haemoglobin Concentration (MCHC)
Mean Cell Volume (MCV)

RQ9140 (2ml)
11 Parameters

Samples every month, 1 x 12 monthly cycle, 12 month subscription

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 (2 x 10 ml)
25 Parameters

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

ACR
Albumin/Microalbumin
Amylase
Calcium
Chloride
Copper
Cortisol

Creatinine
Dopamine
Epinephrine
Glucose
Metanephrine
Norepinephrine

RQ9185 (10ml)
25 Parameters

Samples every month, 1 x 12 monthly cycle, 12 month subscription

Normetanephrine
Magnesium
Osmolality
Oxalate
Phosphate (Inorganic)
Potassium

Protein (Total)
Sodium
Urea
Uric Acid
VMA
5-HIAA

Immunoassay Programme *With target scoring*

RQ9125/a (5 ml)

4 Parameters only + 2 pilots

Samples every two weeks, 2 x 6 monthly cycles, 12 month subscription (RQ9125/a, RQ9125/b, RQ9125/c)

ACTH
AFP
Aldosterone
Amikacin
Androstenedione
β-2-Microglobulin
CA125
CA15-3
CA19-9
Carbamazepine
CEA
Cortisol
C-Peptide

RQ9125/b (5 ml)

13 Parameters only + 2 pilots

DHEA-Sulphate
DHEA Unconjugated
Digoxin
Ferritin
Folate
FSH
Gentamicin
GH
hCG
IgE
Insulin
LH
Oestradiol

RQ9125/c (5 ml)

Full 49 Parameters + 2 pilots

17-OH-Progesterone
Paracetamol
Phenobarbital
Phenytoin
Progesterone
Prolactin
PSA (Free)
PSA (Total)
PTH
Salicylate
SHBG
T₃ (Free)
T₃ (Total)

RQ9130 (5 ml)

Full 49 Parameters + 2 pilots
Samples every month, 1 x 12 month cycle, 12 month subscription (RQ9130)

T₄ (Free)
T₄ (Total)
Testosterone (Free)*
Testosterone (Total)
Theophylline
Thyroglobulin
TSH
Valproic Acid
Vancomycin
Vitamin B12
1-25-(OH)₂-Vitamin D*
25-OH-Vitamin D

Immunoassay Speciality 1 Programme *With target scoring*

RQ9141 (2 ml)

9 Parameters + 1 pilot

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

1-25-(OH)₂-Vitamin D*
25-OH-Vitamin D
C-Peptide

Anti-TG
Anti-TPO
IGF-1

Osteocalcin
Procalcitonin
PTH

Insulin

Immunoassay Speciality 2 Programme *With target scoring*

RQ9142 (1 ml)

5 Parameters

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

Calcitonin
Gastrin

Procalcitonin

Plasma Renin Activity

Renin (Direct Concentration)

Immunosuppressant Programme+

RQ9159 (2 ml)

4 Parameters

Samples every month, 1 x 12 month cycle, 12 month subscription, reference method values

Ciclosporin

Everolimus

Sirolimus

Tacrolimus

Lipid Programme *With target scoring*

RQ9126/a (3 ml)

3 Parameters only (choose from 7)

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

Apolipoprotein A1
Apolipoprotein B

Cholesterol (Total)
HDL-Cholesterol

LDL-Cholesterol
Lipoprotein (a)

Triglycerides

 = Liquid ready-to-use samples

 = Lyophilised samples

PURPLE = The only parameters available on RQ9135/a

+ = Not accredited

* = Pilot study ongoing

RIQAS PROGRAMMES



Maternal Screening Programme *With target scoring*

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

AFP
 free β -hCG

Total hCG
 Inhibin A

PAPP-A

Unconjugated Oestriol

Microbiology (Bacterial Identification) Programme+

RQ9197
 1 strain (complete with case study)
 Samples every 2 months, 1 x 12 month cycles, 12 month subscription

1 strain complete with case study. Identification of the micro-organisms can be made at Gram positive / negative, Genus and Species level. Antimicrobial Susceptibility Testing on identified strain

Antimicrobial Susceptibility Testing

Strain Identification

Neonatal Bilirubin Programme+

RQ9191 (3 ml)
2 Parameters
 Samples every month, 1 x 12 month cycle, 12 month subscription

Direct Bilirubin

Total Bilirubin

Serology (EBV) Programme+

RQ9153 (1 ml)
3 Parameters
 Samples every month, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results

Anti-EBV VCA IgG

Anti-EBNA IgG

Anti-EBV VCA IgM

Serology (HIV-Hepatitis) Programme+

RQ9151 (1.8 ml)
10 Parameters + 6 pilots
 Samples every month, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results

Anti-CMV (Total)
 Anti-HAV IgM*
 Anti-HAV (Total)*
 Anti-HBc

Anti-HBc IgM*
 Anti-HBe (Total)*
 Anti-HBs (Total)*
 Anti-HCV

Anti-HIV-1
 Anti-HIV-2
 Anti-HIV combined
 Anti-HTLV I

Anti-HTLV II
 Anti-HTLV combined
 HBsAg
 P24*

Serology (Syphilis) Programme+

RQ9154 (1 ml)
1 Parameter
 Samples every month, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results

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

Serology (ToRCH) Programme+

RQ9152 (1 ml)
12 Parameters + 3 pilots
 Samples every month, 1 x 12 month cycle, 12 month subscription, Quantitative and Qualitative results

Anti-CMV IgG
 Anti-CMV IgM
 Anti-HSV1 IgG
 Anti-HSV1 IgM

Anti-HSV2 IgG
 Anti-HSV2 IgM
 Anti-HSV1/2 IgG
 Anti-HSV1/2 IgM

Anti-Measles IgG*
 Anti-Mumps IgG*
 Anti-Rubella IgG
 Anti-Rubella IgM

Anti-Toxoplasma IgG
 Anti-Toxoplasma IgM
 Anti-VZV IgG*

Serum Indices Programme+

RQ9194 (1 ml)
3 Indices Assessments
25 Chemistry Parameters
Samples Bi-Monthly, 2 x 9 samples, 12 month subscription

RQ9194/A (1 ml)

Indices Assessment (Quantitative and Semi-Quantitative)

Haemolysis

Icteric

Lipaemic

Parameter Assessment (Quantitative)

ALP
 ALT
 AST
 Bilirubin (Direct)
 Bilirubin (Total)
 Calcium
 Chloride

Cholesterol
 CK NAC
 Creatinine
 GGT
 Glucose
 HDL
 Iron

Lactate
 LDH
 Lipase
 Magnesium
 Phosphate
 Potassium
 Protein (Total)

Sodium
 Triglycerides
 Urea
 Uric Acid

Specific Proteins Programme *With target scoring*

RQ9114 (3 ml)
26 Parameters
Samples every 2 weeks, 2 x 6 monthly cycles, 12 month subscription

RQ9187 (1ml)
26 Parameters
Samples every month, 1 x 12 monthly cycle, 12 month subscription

AFP
 Albumin
 α-1-Acid glycoprotein
 α-1-Antitrypsin
 α-2-Macroglobulin
 Anti Streptolysin O
 Antithrombin III

β-2-Microglobulin
 Ceruloplasmin
 Complement C₃
 Complement C₄
 C-Reactive Protein
 Ferritin
 Haptoglobin

IgA
 IgE
 IgG
 IgM
 Kappa Light Chain (Free)
 Kappa Light Chain (Total)
 Lambda Light Chain (Free)

Lambda Light Chain (Total)
 Prealbumin (Transthyretin)
 Retinol Binding Protein
 Rheumatoid Factor
 Transferrin

Sweat Testing Programme+

RQ9173 (2 ml)
2 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

Chloride

Conductivity

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

Amikacin
 Caffeine
 Carbamazepine
 Ciclosporin
 Digoxin

Ethosuximide
 Gentamicin
 Lithium
 Methotrexate
 Paracetamol (Acetaminophen)

Phenobarbital
 Phenytoin
 Primidone
 Salicylic Acid
 Theophylline

Tobramycin
 Valproic Acid
 Vancomycin

Urinalysis Programme *With scoring*

RQ9138 (12 ml)
14 Parameters
Samples every 2 months, 1 x 12 month cycle, 12 month subscription

Albumin
 Bilirubin
 Blood
 Creatinine

Galactose
 Glucose
 hCG
 Ketones

Leucocytes
 Nitrite
 pH
 Protein

Specific Gravity
 Urobilinogen

Urine Toxicology Programme+

RQ9139 (5 ml)
20 Parameters
Samples every month, 1 x 12 month cycle, 12 month subscription

Benzoyllecgonine
 Buprenorphine
 Cannabinoids (THC)
 Cotinine
 Creatinine
 d-Amphetamine

d-Methamphetamine
 EDDP
 Ethanol
 Free Morphine
 Lorazepam
 LSD

MDMA
 Methadone
 Nortriptyline
 Norpropoxyphene
 Oxazepam
 Phencyclidine

Phenobarbital
 Secobarbital

Whilst every attempt is made to ensure that information is accurate and up-to-date, some information is subject to change, please contact RIQAS for current details.

 = Liquid ready-to-use samples

 = Lyophilised samples

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		Ammonia / Ethanol	Anti-Mullerian Hormone (AMH) +	Anti-TSH Receptor +	Blood Gas	BNP +	Cardiac	Cardiac Plus	Cerebrospinal Fluid +	Coagulation	CO-Oximetry +	CYFRA 21-1 +	Cytokines +	ESR +	General Clinical Chemistry	HbA1c	Haematology	Human Urine	Immunoassay
#	1-25-(OH) ₂ -Vitamin D*																		X
	17-OH-Progesterone																		X
	25-OH-Vitamin D																		X
	5-HIAA																X		
A	α-1-Acid Glycoprotein																		
	α-1-Antitrypsin																		
	α-2-Macroglobulin																		
	ACE (Angiotensin Converting Enzyme)													X					
	Acid Phosphatase (Prostatic)													X					
	Acid Phosphatase (Total)													X					
	ACR																X		
	ACTH																	X	
	AFP																	X	
	Albumin							X						X			X		
	Aldosterone																	X	
	Alkaline Phosphatase													X					
	ALT																		
	ALT (ALAT)													X					
	Amikacin																	X	
	Ammonia	X																	
	Amylase (Pancreatic)													X					
	Amylase (Total)													X			X		
	Androstenedione																	X	
	Anti Streptolysin O (ASO)																		
	Anti-CMV																		
	Anti-CMV IgG																		
	Anti-CMV IgM																		
	Anti-EBNA IgG																		
	Anti-EBV VCA IgG																		
	Anti-EBV VCA IgM																		
	Anti-HAV IgM*																		
	Anti-HAV (Total)*																		
	Anti-HBc																		
	Anti-HBc IgM*																		
	Anti-HBe (Total)*																		
	Anti-HBs (Total)*																		
	Anti-HCV																		
	Anti-HIV-1																		
	Anti-HIV-1 & 2 Combined																		
	Anti-HIV-2																		
	Anti-HSV-1 & 2 IgG Combined																		
	Anti-HSV-1 & 2 IgM Combined																		
	Anti-HSV1 IgG																		
	Anti-HSV1 IgM																		
	Anti-HSV2 IgG																		
	Anti-HSV2 IgM																		
	Anti-HTLV-1 & 2 Combined																		
	Anti-HTLV-I																		
	Anti-HTLV-II																		
	Anti-Measles IgG*																		
	Antimicrobial Susceptibility Testing																		

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Immunoassay Specialty 1	Immunoassay Specialty 2	Immunosuppressant +	Lipid	Maternal Screening	Microbiology (Bacterial Identification) +	Neonatal Bilirubin +	Serology (EBV) +	Serology (HIV / Hepatitis) +	Serology (Syphilis) +	Serology (ToRCH) +	Serum Indices +	Specific Proteins	Sweat Testing +	Therapeutic Drug	Urinalysis	Urine Toxicology +		
X																	1-25-(OH) ₂ -Vitamin D*	#
																	17-OH-Progesterone	
X																	25-OH-Vitamin D	
																	5-HIAA	
												X					α-1-Acid Glycoprotein	A
												X					α-1-Antitrypsin	
												X					α-2-Macroglobulin	
																	ACE (Angiotensin Converting Enzyme)	
																	Acid Phosphatase (Prostatic)	
																	Acid Phosphatase (Total)	
																	ACR	
				X								X					ACTH	
												X					AFP	
												X			X		Albumin	
																	Aldosterone	
											X						Alkaline Phosphatase	
											X						ALT	
																	ALT (ALAT)	
														X			Amikacin	
																	Ammonia	
																	Amylase (Pancreatic)	
																	Amylase (Total)	
																	Androstenedione	
												X					Anti Streptolysin O (ASO)	
								X									Anti-CMV	
										X							Anti-CMV IgG	
										X							Anti-CMV IgM	
																	Anti-EBNA IgG	
							X										Anti-EBV VCA IgG	
							X										Anti-EBV VCA IgM	
								X									Anti-HAV IgM*	
								X									Anti-HAV (Total)*	
								X									Anti-HBc	
								X									Anti-HBc IgM*	
								X									Anti-HBe (Total)*	
								X									Anti-HBs (Total)*	
								X									Anti-HCV	
								X									Anti-HIV-1	
								X									Anti-HIV-1 & 2 Combined	
								X									Anti-HIV-2	
										X							Anti-HSV-1 & 2 IgG Combined	
										X							Anti-HSV-1 & 2 IgM Combined	
										X							Anti-HSV1 IgG	
										X							Anti-HSV1 IgM	
										X							Anti-HSV2 IgG	
										X							Anti-HSV2 IgM	
								X									Anti-HTLV-1 & 2 Combined	
								X									Anti-HTLV-I	
								X									Anti-HTLV-II	
										X							Anti-Measles IgG*	
					X												Antimicrobial Susceptibility Testing	

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A	Anti-Müllerian Hormone (AMH)		X																
	Anti-Mumps IgG*																		
	Anti-Rubella IgG																		
	Anti-Rubella IgM																		
	Anti-TG																		
	Antithrombin III									X									
	Anti-Toxoplasma IgG																		
	Anti-Toxoplasma IgM																		
	Anti-TPO																		
	Anti-TSH Receptor (TRAb)			X															
	Anti-VZV IgG*																		
	Apolipoprotein AI																		
	Apolipoprotein B																		
	aPTT									X									
	AST																		
	AST (ASAT)														X				
B	β-2-Microglobulin																		X
	Benzoyllecgonine																		
	Bicarbonate				X										X				
	Bile Acids														X				
	Bilirubin (Direct)														X				
	Bilirubin (Total)														X				
	Blood																		
	BNP					X													
	Buprenorphine																		
C	CA15-3																		X
	CA19-9																		X
	CA125																		X
	Caffeine																		
	Calcitonin																		
	Calcium														X		X		
	Calcium, Adjusted														X				
	Calcium (Ionised)				X										X				
	Cannabinoids (THC)																		
	Carbamazepine																		X
	Carboxyhaemoglobin (COHb / HbCO)										X								X
	CEA																		X
	Ceruloplasmin																		
	Chloride				X				X						X		X		
	Cholesterol (Total)														X				
	Cholinesterase														X				
	Ciclosporin																		
	CK, Total						X	X							X				
	CK-MB (Activity)						X	X											
	CK-MB (Mass)						X	X											
	CK NAC																		
	CO ₂ , Total				X														
	Complement C ₃																		
	Complement C ₄																		
	Conductivity																		
	Copper														X		X		

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										X							Anti-Müllerian Hormone (AMH)	A
										X							Anti-Mumps IgG*	
										X							Anti-Rubella IgG	
										X							Anti-Rubella IgM	
X																	Anti-TG	
												X					Antithrombin III	
										X							Anti-Toxoplasma IgG	
										X							Anti-Toxoplasma IgM	
X																	Anti-TPO	
																	Anti-TSH Receptor (TRAb)	
										X							Anti-VZV IgG*	
			X														Apolipoprotein AI	
			X														Apolipoprotein B	
																	aPTT	
											X						AST	
																	AST (ASAT)	
												X					β-2-Microglobulin	B
																X	Benzoylcegonine	
																	Bicarbonate	
																	Bile Acids	
						X					X						Bilirubin (Direct)	
						X					X				X		Bilirubin (Total)	
															X		Blood	
																	BNP	
																X	Buprenorphine	
																	CA15-3	C
																	CA19-9	
																	CA125	
	X													X			Caffeine	
																	Calcitonin	
											X						Calcium	
																	Calcium, Adjusted	
																	Calcium (Ionised)	
																X	Cannabinoids (THC)	
														X			Carbamazepine	
																	Carboxyhaemoglobin (COHb / HbCO)	
																	CEA	
												X					Ceruloplasmin	
											X		X				Chloride	
			X								X						Cholesterol (Total)	
																	Cholinesterase	
		X												X			Ciclosporin	
																	CK, Total	
																	CK-MB (Activity)	
																	CK-MB (Mass)	
											X						CK NAC	
																	CO ₂ , Total	
												X					Complement C ₃	
												X					Complement C ₄	C
													X				Conductivity	
																	Copper	

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C	Cortisol																	X	X
	Cotinine																		
	C-Peptide																		X
	C-Reactive Protein (CRP)																		
	Creatinine													X			X		
	CYFRA 21-1 (Cytokeratin 19)											X							
D	D-3-Hydroxybutyrate													X					
	d-Amphetamine																		
	D-Dimer* ^Δ							X		X									
	Deoxyhaemoglobin (HHb)										X								
	DHEA Unconjugated																		X
	DHEA-Sulphate																		X
	Digoxin							X											X
	d-Methamphetamine																		
	Dopamine																X		
E	EDDP																		
	eGFR (estimated glomerular filtration rate)													X					
	Epidermal Growth Factor (EGF)*												X						
	Epinephrine																X		
	ESR													X					
	Ethanol	X																	
	Ethosuximide																		
F	Everolimus																		
	Factor II									X									
	Factor IX									X									
	Factor V									X									
	Factor VII									X									
	Factor VIII									X									
	Factor X									X									
	Factor XI									X									
	Factor XII									X									
	Ferritin																		X
	Fibrinogen									X									
	Folate																		X
	Free Morphine																		
	free β-hCG																		
	Fructosamine													X					
	FSH																		X
G	γ-GT													X					
	Galactose																		
	Gastrin																		
	Gentamicin																		X
	Growth Hormone (GH)																		X
	GLDH													X					
	Glucose				X				X					X			X		
H	Haematocrit (HCT)																X		
	Haemoglobin (Hb)																X		
	Total Haemoglobin (tHb)										X					X			
	Haemolysis																		
	Haptoglobin																		
	HbA1c															X			

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																	Cortisol	C
X																X	Cotinine	
												X					C-Peptide	
																	C-Reactive Protein (CRP)	
											X				X	X	Creatinine	
																	CYFRA 21-1 (Cytokeratin 19)	D
																	D-3-Hydroxybutyrate	
																X	d-Amphetamine	
																	D-Dimer* ^Δ	
																	Deoxyhaemoglobin (HHb)	
																	DHEA Unconjugated	
																	DHEA-Sulphate	
														X			Digoxin	
																X	d-Methamphetamine	
																	Dopamine	E
																X	EDDP	
																	eGFR (estimated glomerular filtration rate)	
																	Epidermal Growth Factor (EGF)*	
																	Epinephrine	
																	ESR	F
																X	Ethanol	
															X		Ethosuximide	
																	Everolimus	
		X															Factor II	
																	Factor IX	G
																	Factor V	
																	Factor VII	
																	Factor VIII	
																	Factor X	
																	Factor XI	
																	Factor XII	
												X					Ferritin	
																	Fibrinogen	
																	Folate	
																X	Free Morphine	
																	free β-hCG	
																	Fructosamine	
																	FSH	
											X						γ-GT	
	X														X		Galactose	
																	Gastrin	
														X			Gentamicin	
																	Growth Hormone (GH)	
																	GLDH	
											X				X		Glucose	
																	Haematocrit (HCT)	H
																	Haemoglobin (Hb)	
																	Total Haemoglobin (tHb)	
											X						Haemolysis	
												X					Haptoglobin	
																	HbA1c	

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		Ammonia / Ethanol	Anti-Mullerian Hormone (AMH) +	Anti-TSH Receptor +	Blood Gas	BNP +	Cardiac	Cardiac Plus	Cerebrospinal Fluid +	Coagulation	CO-Oximetry +	CYFRA 21-1 +	Cytokines +	ESR +	General Clinical Chemistry	HbA1c	Haematology	Human Urine	Immunoassay
H	HBsAg																		
	HBDH														X				
	hCG																		X
	HDL-Cholesterol														X				
	Homocysteine						X	X											
	hsCRP							X											
I	Icteric																		
	IgA																		
	IgE																		X
	IGF-1																		
	IgG								X										
	IgM																		
	Inhibin A																		
	Insulin																		X
	Interferon gamma (INF-γ)*												X						
	Interleukin – 1 alpha (IL-1α)*												X						
	Interleukin – 1 beta (IL-1β)*												X						
	Interleukin – 10 (IL-10)*												X						
	Interleukin – 2 (IL-2)*												X						
	Interleukin – 4 (IL-4)*												X						
	Interleukin – 6 (IL-6)												X						
	Interleukin – 8 (IL-8)*												X						
	Iron														X				
K	Kappa Light Chain (Free)																		
	Kappa Light Chain (Total)																		
	Ketones																		
L	Lactate				X				X						X				
	Lambda Light Chain (Free)																		
	Lambda Light Chain (Total)																		
	LD (LDH)														X				
	LDL-Cholesterol														X				
	Leucocytes																		
	Lipase																		
	Lipoprotein (a)														X				
	Lithium														X				
	Lorazepam																		
	LSD																		
	Luteinising Hormone (LH)																		X
M	Magnesium														X			X	
	MDMA																		
	Mean Cell Haemoglobin (MCH)																X		
	Mean Cell Haemoglobin Concentration (MCHC)																X		
	Mean Cell Volume (MCV)																X		
	Mean Platelet Volume (MPV)																X		
	Metanephrine																	X	
	Methadone																		
	Methaemoglobin (MetHb)										X								
	Methotrexate																		
	Monocyte Chemoattractant Protein -1 (MCP-1)*												X						
	Myoglobin						X	X											

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								X									HBsAg	H
																	HBDH	
															X		hCG	
			X								X						HDL-Cholesterol	
																	Homocysteine	
																	hsCRP	
											X						Icteric	I
												X					IgA	
X												X					IgE	
												X					IGF-1	
												X					IgG	
												X					IgM	
				X													Inhibin A	
X																	Insulin	
																	Interferon gamma (INF-γ)*	
																	Interleukin – 1 alpha (IL-1α)*	
																	Interleukin – 1 beta (IL-1β)*	
																	Interleukin – 10 (IL-10)*	
																	Interleukin – 2 (IL-2)*	
																	Interleukin – 4 (IL-4)*	
																	Interleukin – 6 (IL-6)	
																	Interleukin – 8 (IL-8)*	
											X						Iron	
												X					Kappa Light Chain (Free)	K
												X					Kappa Light Chain (Total)	
															X		Ketones	
											X						Lactate	L
												X					Lambda Light Chain (Free)	
												X					Lambda Light Chain (Total)	
											X						LD (LDH)	
			X														LDL-Cholesterol	
															X		Leucocytes	
											X						Lipase	
			X														Lipoprotein (a)	
														X			Lithium	
																X	Lorazepam	
																X	LSD	
																	Luteinising Hormone (LH)	
											X						Magnesium	M
																X	MDMA	
																	Mean Cell Haemoglobin (MCH)	
																	Mean Cell Haemoglobin Concentration (MCHC)	
																	Mean Cell Volume (MCV)	
																	Mean Platelet Volume (MPV)	
																	Metanephrine	
																X	Methadone	
																	Methaemoglobin (MetHb)	
														X			Methotrexate	
																	Monocyte Chemoattractant Protein -1 (MCP-1)*	
																	Myoglobin	

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		Ammonia / Ethanol	Anti-Mullerian Hormone (AMH) +	Anti-TSH Receptor +	Blood Gas	BNP +	Cardiac	Cardiac Plus	Cerebrospinal Fluid +	Coagulation	CO-Oximetry +	CYFRA 21-1 +	Cytokines +	ESR +	General Clinical Chemistry	HbA1c	Haematology	Human Urine	Immunoassay
N	NEFA														X				
	Nitrite																		
	Non-HDL Cholesterol														X				
	Norepinephrine																	X	
	Normetanephrine																	X	
	Norpropoxyphene																		
	Nortriptyline																		
	NTproBNP							X											
O	Oestradiol																		X
	Osmolality														X			X	
	Osteocalcin																	X	
	Oxalate																	X	
	Oxazepam																		
	Oxygen Content (O2CT)										X								
	Oxygen Saturation (sO2 / Vol O2)										X								
	Oxyhaemoglobin (O2Hb / HbO2)										X								
P	P24*																		
	PAPP-A																		
	Paracetamol (Acetaminophen)																		X
	pCO ₂				X														
	pH				X														
	Phencyclidine																		
	Phenobarbital																		X
	Phenytoin																		X
	Phosphate (Inorganic)														X			X	
	Plasma Renin Activity																		
	Plasminogen									X									
	Plateletcrit (PCT)																X		
	Platelets (PLT)																X		
	pO ₂				X														
	Potassium				X										X			X	
	Prealbumin (Transthyretin)																		
	Primidone																		
	Procalcitonin																		
	Progesterone																		X
	Prolactin																		X
	Protein (Total)								X						X			X	
	Protein C									X									
	Protein S									X									
	PSA (Free)																		X
	PSA (Total)														X				X
	PT (Including INR)									X									
	PTH																		X
R	Red Blood Cell Count (RBC)																X		
	Red Cell Distribution Width (RDW)																X		
	Renin (Direct Concentration)																		
	Retinol Binding Protein																		
	Rheumatoid Factor																		
S	Salicylic Acid																		X
	Secobarbital																		
	SHBG																		X

^a Pilot status only in certain programmes. Please check pages 42-46 for more information.

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* = Pilot study ongoing

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Immunoassay Specialty 1	Immunoassay Specialty 2	Immunosuppressant +	Lipid	Maternal Screening	Microbiology (Bacterial Identification) +	Neonatal Bilirubin +	Serology (EBV) +	Serology (HIV / Hepatitis) +	Serology (Syphilis) +	Serology (ToRCH) +	Serum Indices +	Specific Proteins	Sweat Testing +	Therapeutic Drug	Urinalysis	Urine Toxicology +	
															X	NEFA	N
																Nitrite	
																Non-HDL Cholesterol	
																Norepinephrine	
																Normetanephrine	
															X	Norpropoxyphene	
															X	Nortriptyline	
																NTproBNP	
																Oestradiol	O
X																Osmolality	
																Osteocalcin	
																Oxalate	
															X	Oxazepam	
																Oxygen Content (O2CT)	
																Oxygen Saturation (sO2 / Vol O2)	
																Oxyhaemoglobin (O2Hb / HbO2)	
								X								P24*	P
				X												PAPP-A	
														X		Paracetamol (Acetaminophen)	
																pCO ₂	
															X	pH	
															X	Phencyclidine	
														X	X	Phenobarbital	
														X		Phenytoin	
											X					Phosphate (Inorganic)	
	X															Plasma Renin Activity	
																Plasminogen	
																Plateletcrit (PCT)	
																Platelets (PLT)	
																pO ₂	
												X				Potassium	
													X			Prealbumin (Transthyretin)	
X	X													X		Primidone	
																Procalcitonin	
																Progesterone	
																Prolactin	
											X				X	Protein (Total)	
																Protein C	
																Protein S	
																PSA (Free)	
																PSA (Total)	
																PT (Including INR)	
X																PTH	
																Red Blood Cell Count (RBC)	R
																Red Cell Distribution Width (RDW)	
	X															Renin (Direct Concentration)	
											X					Retinol Binding Protein	
											X					Rheumatoid Factor	
													X			Salicylic Acid	S
															X	Secobarbital	
																SHBG	

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PARAMETER INDEX

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		Ammonia / Ethanol	Anti-Mullerian Hormone (AMH) +	Anti-TSH Receptor +	Blood Gas	BNP +	Cardiac	Cardiac Plus	Cerebrospinal Fluid +	Coagulation	CO-Oximetry +	CYFRA 21-1 +	Cytokines +	ESR +	General Clinical Chemistry	HbA1c	Haematology	Human Urine	Immunoassay
S	Sirolimus																		
	Sodium				X				X						X			X	
	Specific Gravity																		
	Strain Identification																		
	Syphilis																		
T	T ₃ (Free)														X				X
	T ₃ (Total)														X				X
	T ₄ (Free)														X				X
	T ₄ (Total)														X				X
	Tacrolimus																		
	Testosterone (Free)*																		X
	Testosterone (Total)																		X
	Theophylline																		X
	Thyroglobulin																		X
	TIBC														X				
	Tobramycin																		
	Total hCG																		
	Transferrin																		
	Triglycerides														X				
	Troponin I						X	X											
	Troponin T						X	X											
	TSH														X				X
	TT									X									
	Tumour Necrosis Factor alpha (TNF-α)*												X						
U	UIBC														X				
	Unconjugated Oestriol																		
	Urea														X			X	
	Uric Acid														X			X	
	Urobilinogen																		
V	Valproic Acid																		X
	Vancomycin																		X
	Vascular Endothelial Growth Factor (VEGF)*												X						
	Vitamin B12																		X
	VMA																X		
W	Total White Blood Cell Count (WBC)																X		
Z	Zinc														X				

PARAMETER INDEX

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Immunoassay Speciality 1	Immunoassay Speciality 2	Immunosuppressant +	Lipid	Maternal Screening	Microbiology (Bacterial Identification) +	Neonatal Bilirubin +	Serology (EBV) +	Serology (HIV / Hepatitis) +	Serology (Syphilis) +	Serology (ToRCH) +	Serum Indices +	Specific Proteins	Sweat Testing +	Therapeutic Drug	Urinalysis	Urine Toxicology +		
		X									X						Sirolimus	S
											X						Sodium	
					X										X		Specific Gravity	
									X								Strain Identification	
																	Syphilis	
																	T ₃ (Free)	T
																	T ₃ (Total)	
																	T ₄ (Free)	
																	T ₄ (Total)	
		X															Tacrolimus	
																	Testosterone (Free)*	
																	Testosterone (Total)	
														X			Theophylline	
																	Thyroglobulin	
														X			TIBC	
				X													Tobramycin	
														X			Total hCG	
			X								X	X					Transferrin	
											X						Triglycerides	
																	Troponin I	
																	Troponin T	
																	TSH	
																	TT	
																	Tumour Necrosis Factor alpha (TNF-α)*	
				X													UIBC	U
											X						Unconjugated Oestriol	
											X						Urea	
											X						Uric Acid	
															X		Urobilinogen	
														X			Valproic Acid	V
																	Vancomycin	
																	Vascular Endothelial Growth Factor (VEGF)*	
																	Vitamin B12	
																	VMA	
																	Total White Blood Cell Count (WBC)	W
																	Zinc	Z

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⁴ Pilot status only in certain programmes. Please check pages 42-46 for more information.

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