Weqas
Unit 6, Parc Tŷ Glas
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EXTERNAL QUALITY ASSESSMENT

INTERNAL QUALITY CONTROL

REFERENCE MEASUREMENT SERVICES

EDUCATION & TRAINING

Weqas | GLOBAL PROVIDER OF QUALITY IN DIAGNOSTIC MEDICINE

POCT EQA Report Interpretation

Gareth Davies

Overview

- The Weqas Report - Statistical Indices
  - Imprecision
  - Inaccuracy
- How do we set Analytical Performance Specifications (APS) and Target Values
- Weqas Connect Reports
- Problem Solving and Cases
- Case Study Example

The Weqas Report
Statistical Indices

- Imprecision: Sy.x, r, IS
- Inaccuracy: Bias plot, y=mx+c

Interpretation of Imprecision

Sy.x is the deviation around the best fit line and is an indication of scatter. It is used as an index of within run imprecision. This is given in the units of the analyte in question.

Correlation coefficient (**r value**) is also an index of within run imprecision. The closer to 1.0 the value is, the better the precision (less scatter about the best fit line).

IS is derived from the correlation coefficient (IS = (1-r)*10,000).

'r' value	**Imprecision score**	
0.9990 to 1.0000	0 to 10	- Good
0.9850 to 0.9989	11 to 150	- Acceptable to Warning level
< 0.9850	> 150	- Unacceptable (including Curvilinear Data)

Imprecision indices

Standard deviation

$$\mathrm{SD} = \sqrt{\frac{\Sigma\,(\bar{y}-y)^2}{\text{d.f.}}}$$

where
y = observed value
ȳ = expected value
d.f. = degrees of freedom

Standard dev of residuals

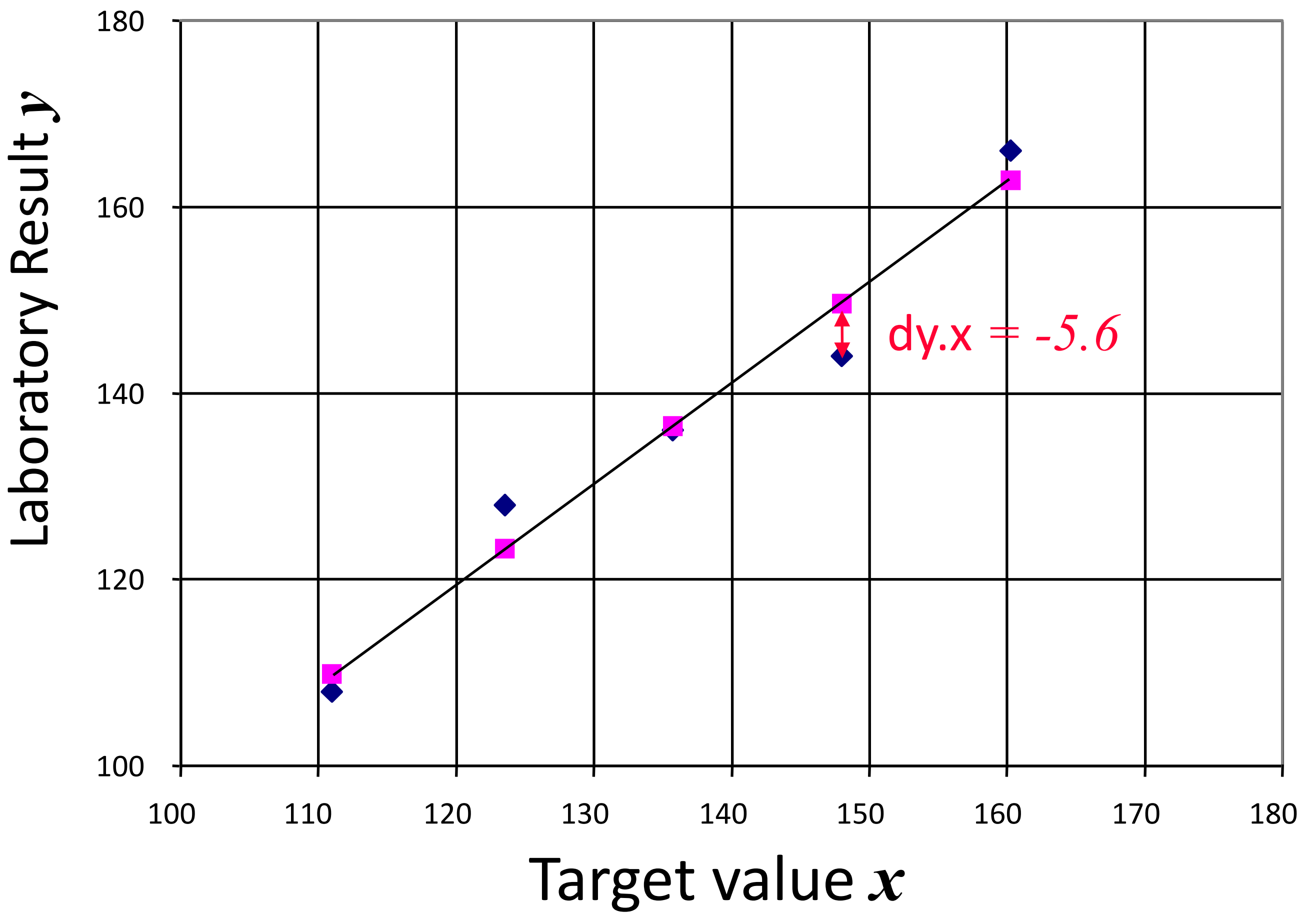
$$\mathrm{Sy.x} = \sqrt{\frac{\Sigma\,(\tilde{y}-y)^2}{\text{d.f.}}}$$

where
ỹ = the value on the line of best fit

Imprecision – Scatter around the “best fit line”, *Sy.x*

Sodium (mmol/l)

Measurement of scatter



■

r = 1.000
Sy.x = 0

All reported results are on the “best fit” line – no scatter

◆

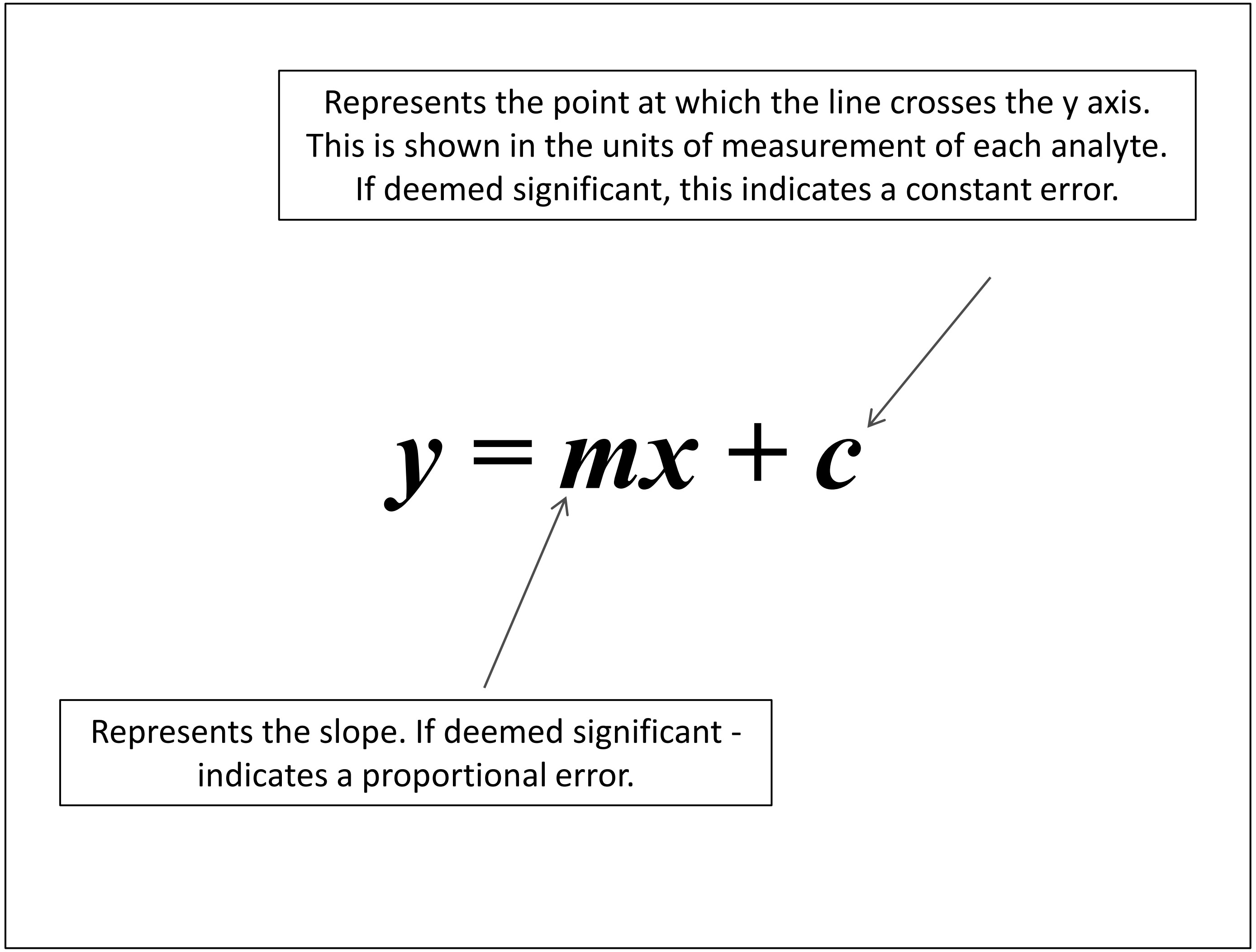
r = 0.9812
Sy.x= 4.1

Reported results are scattered around the “best fit” line – standard deviation of 4.1 mmol/L

Imprecision – how to calculate *Sy.x*

Target value	Lab result	Line of best fit	Deviation	
x	y	$\tilde{y}$	$y-\tilde{y}=dy.x$	$dy.x^2$
111	108	109.9	-1.9	3.62
123.5	128	123.3	4.7	21.97
135.7	136	136.4	-0.4	0.16
148	144	149.6	-5.6	31.30
160.3	166	162.8	3.2	10.31
slope	*1.07*		$\sum dy.x$	$\sum dy.x^2$
int	*-9.17*		0.0	67.36
			d.f = n-1 = 4	
	$S_{y.x}$ =	$\sqrt{\sum dy.x^2/d.f}$	$\sqrt{67.4/4}$	*4.10*

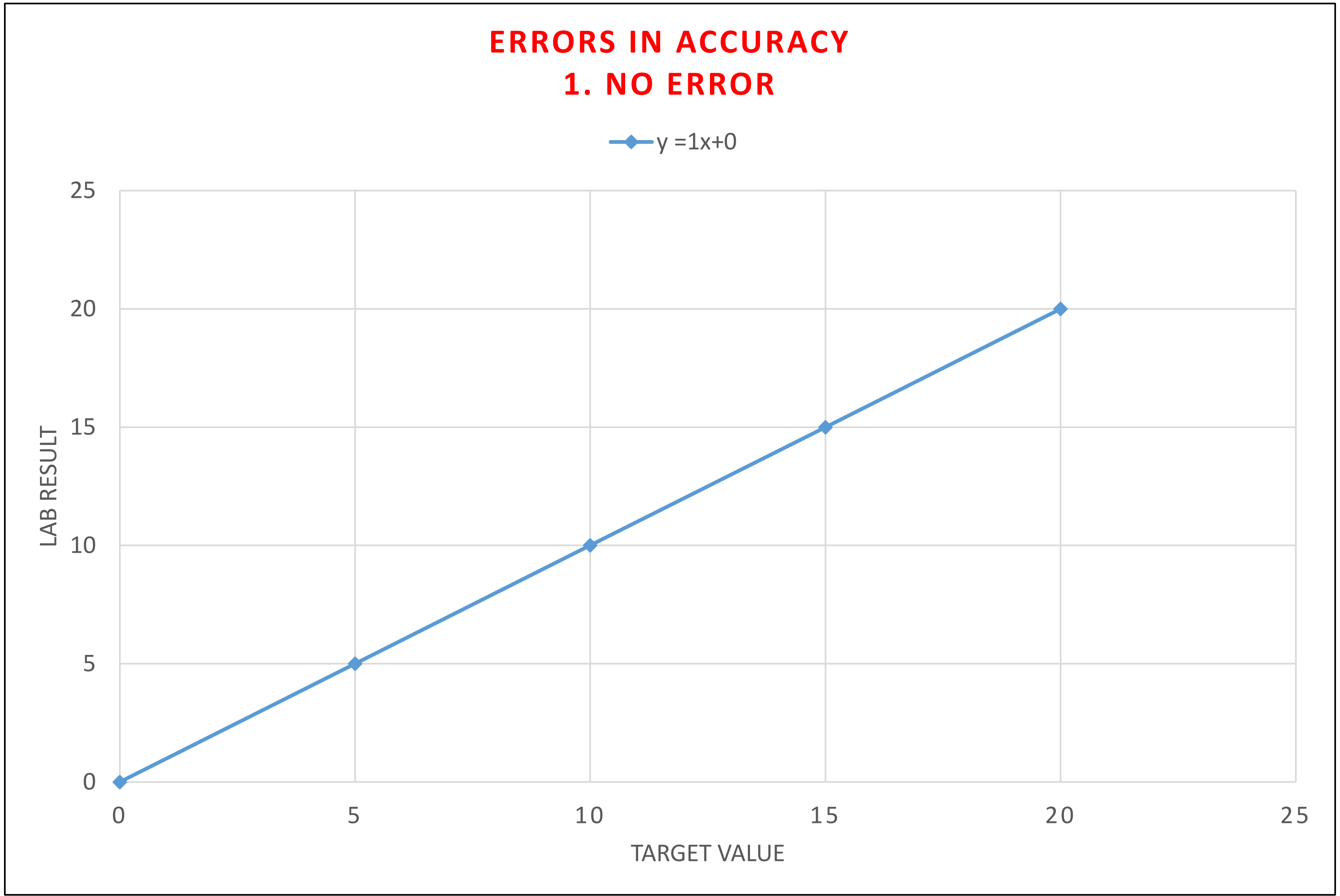
Interpretation of Inaccuracy

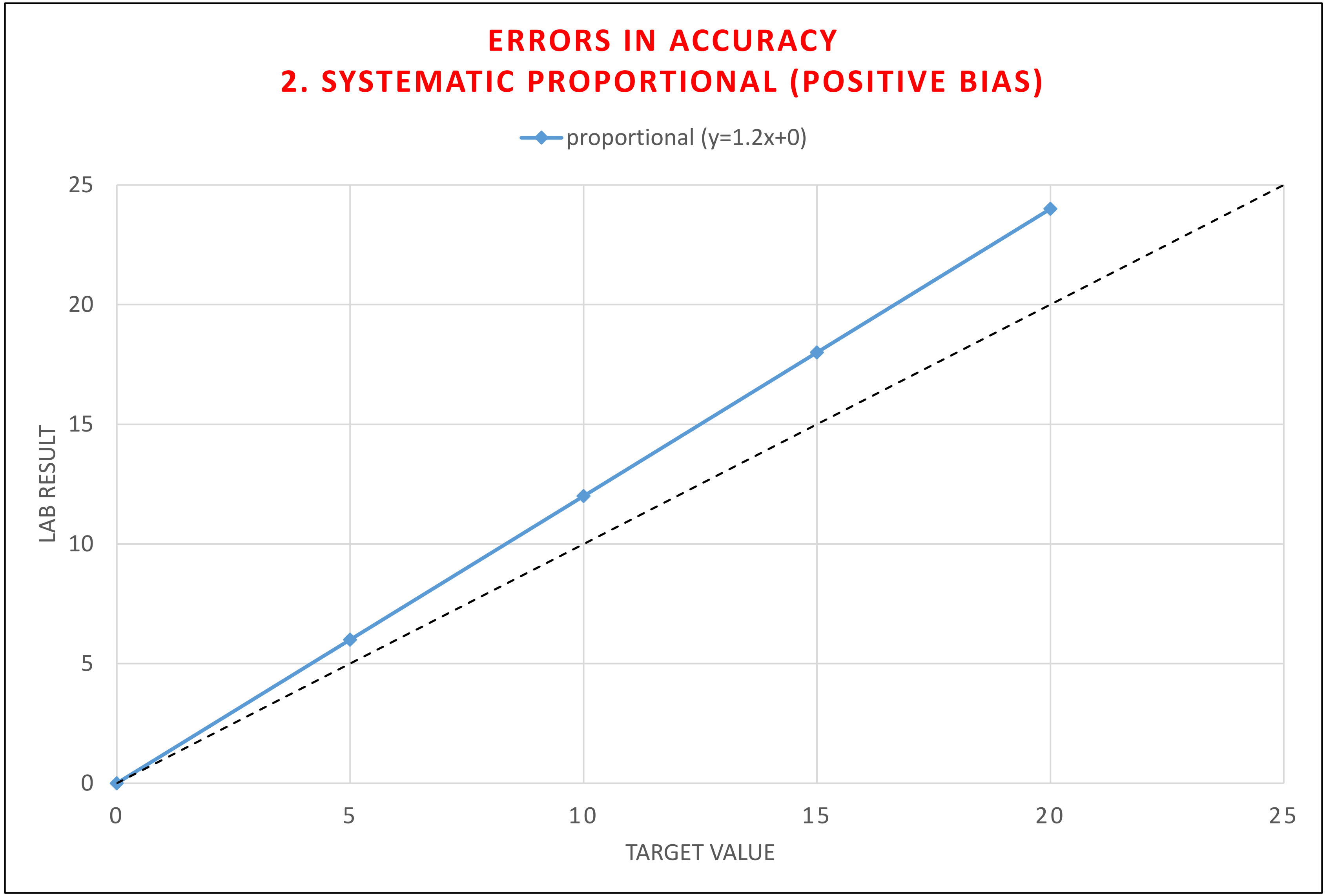


Represents the point at which the line crosses the y axis. This is shown in the units of measurement of each analyte. If deemed significant, this indicates a constant error.

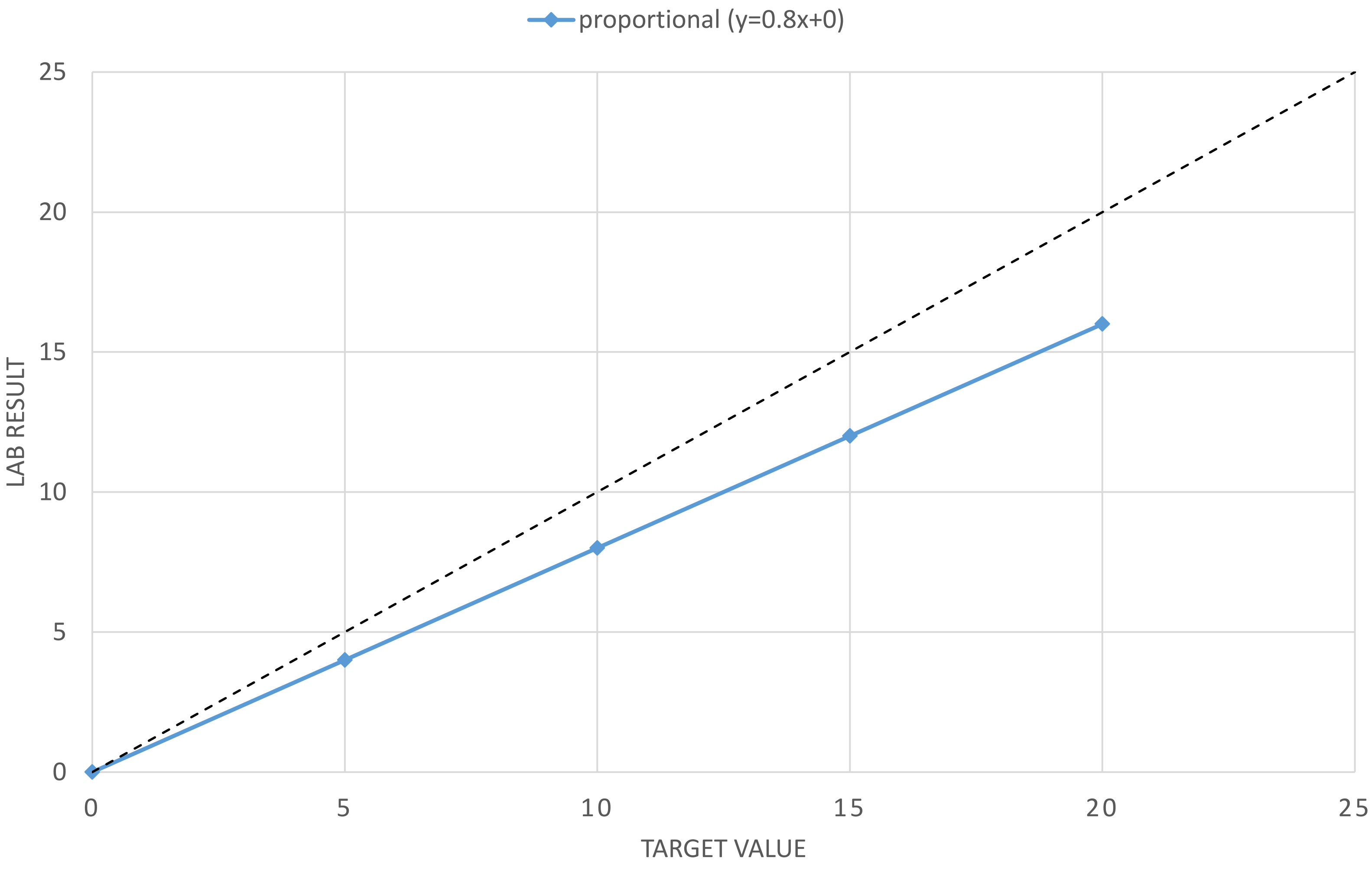
$$y = mx + c$$

Represents the slope. If deemed significant - indicates a proportional error.

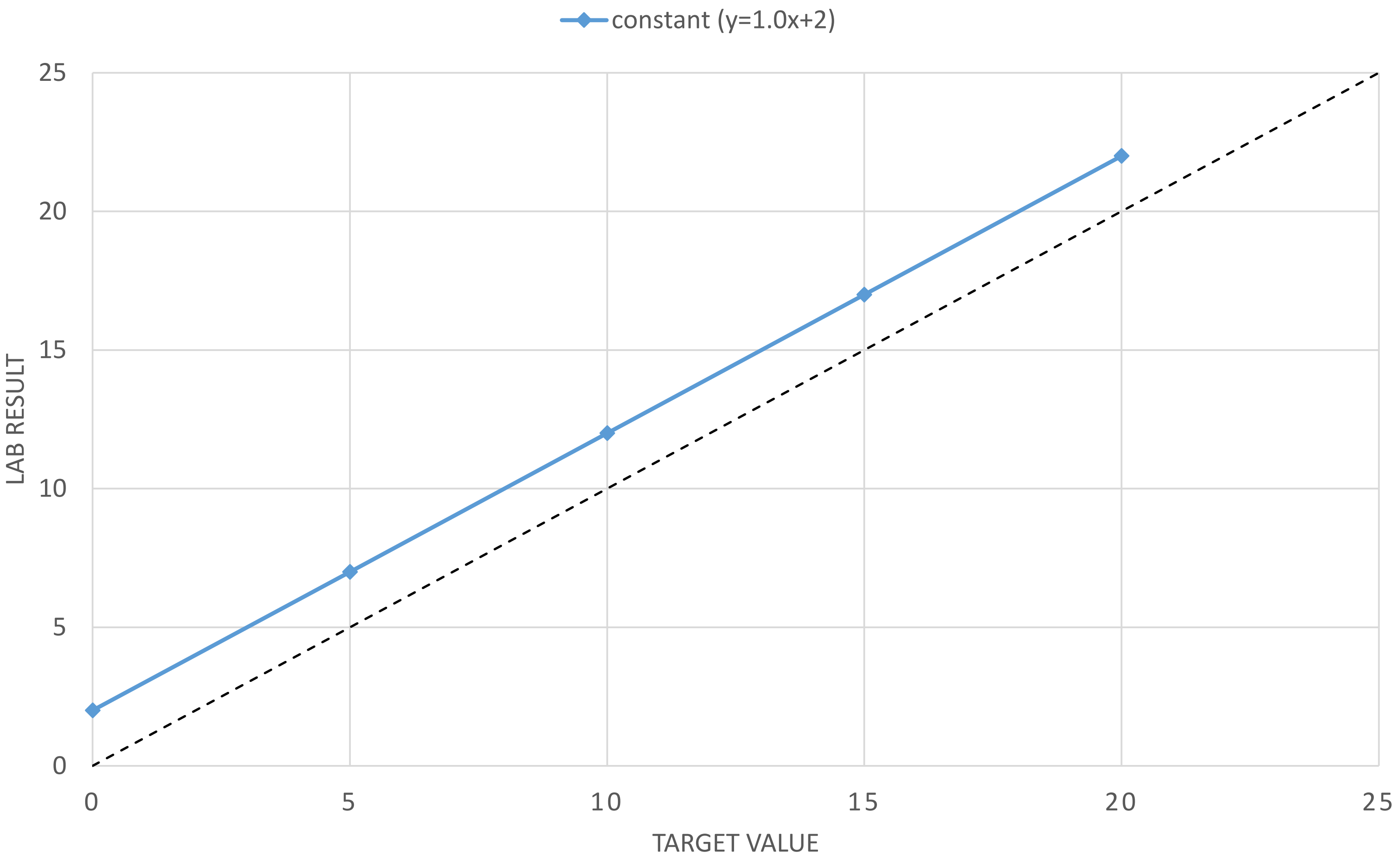

ERRORS IN ACCURACY
1. NO ERROR
y =1x+0
LAB RESULT
TARGET VALUE
0
5
10
15
20
25
0
5
10
15
20
25

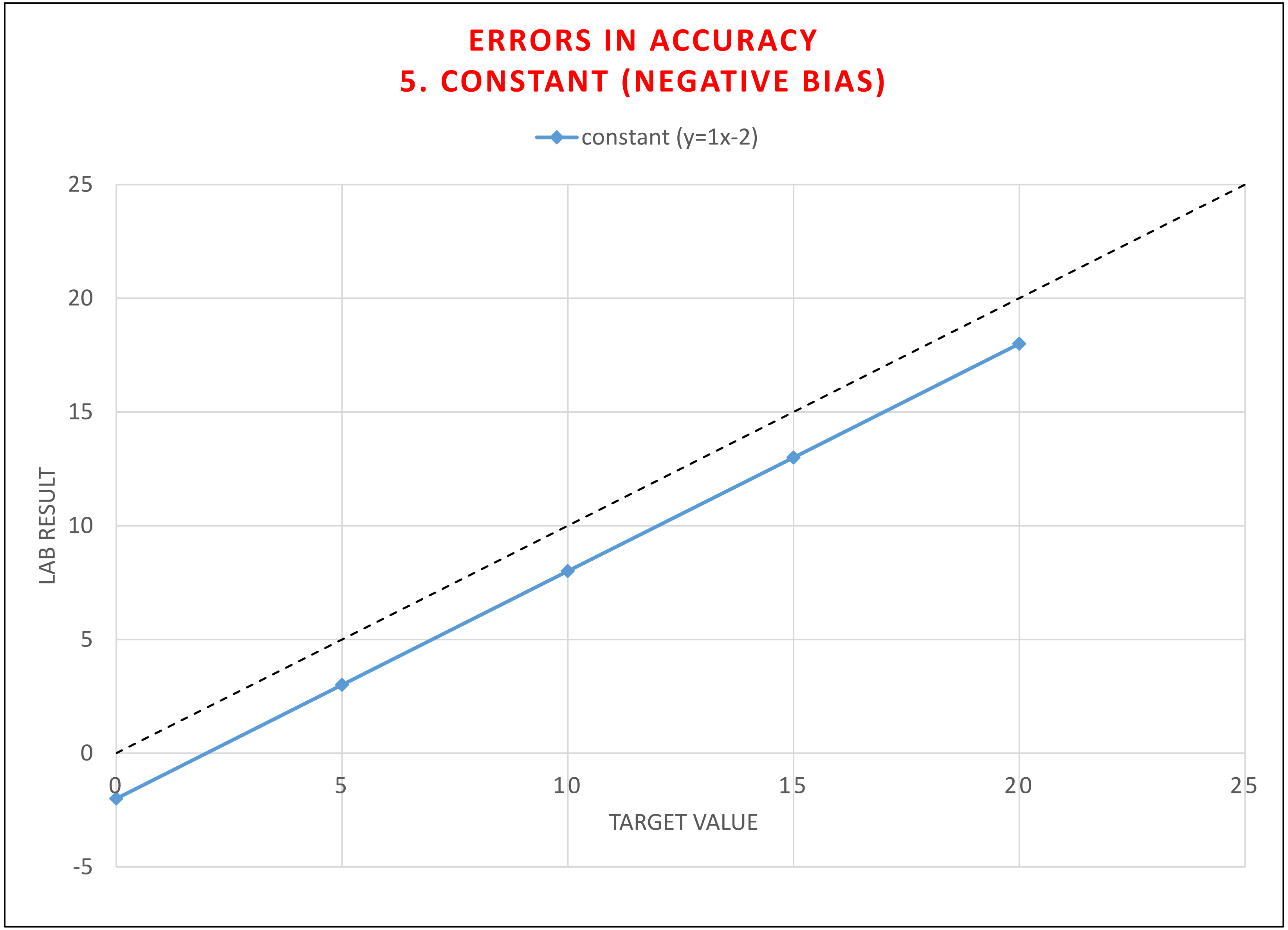

ERRORS IN ACCURACY
2. SYSTEMATIC PROPORTIONAL (POSITIVE BIAS)
proportional (y=1.2x+0)
25
20
15
10
5
0
LAB RESULT
0
5
10
15
20
25
TARGET VALUE

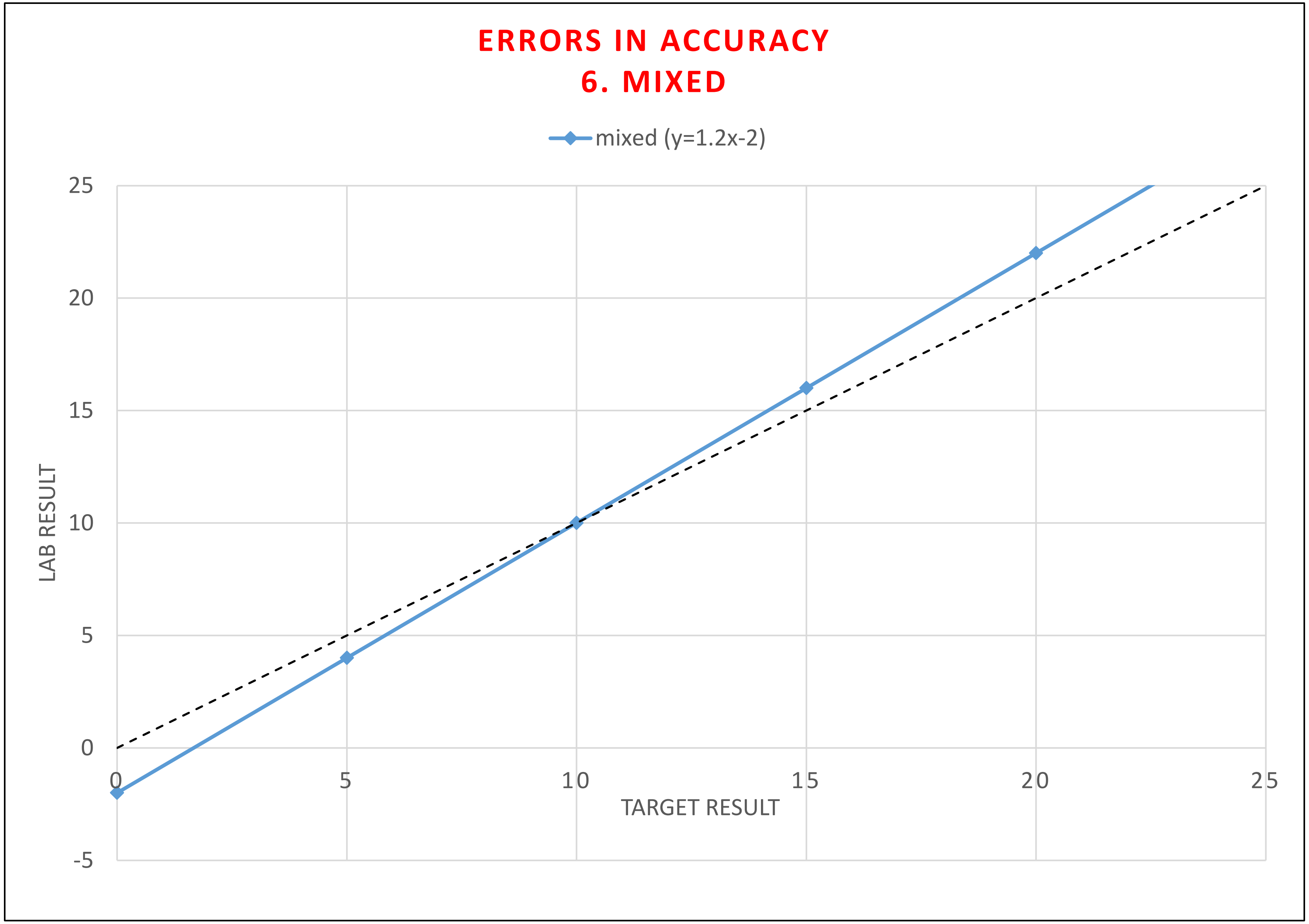
ERRORS IN ACCURACY
3. SYSTEMATIC PROPORTIONAL (NEGATIVE BIAS)

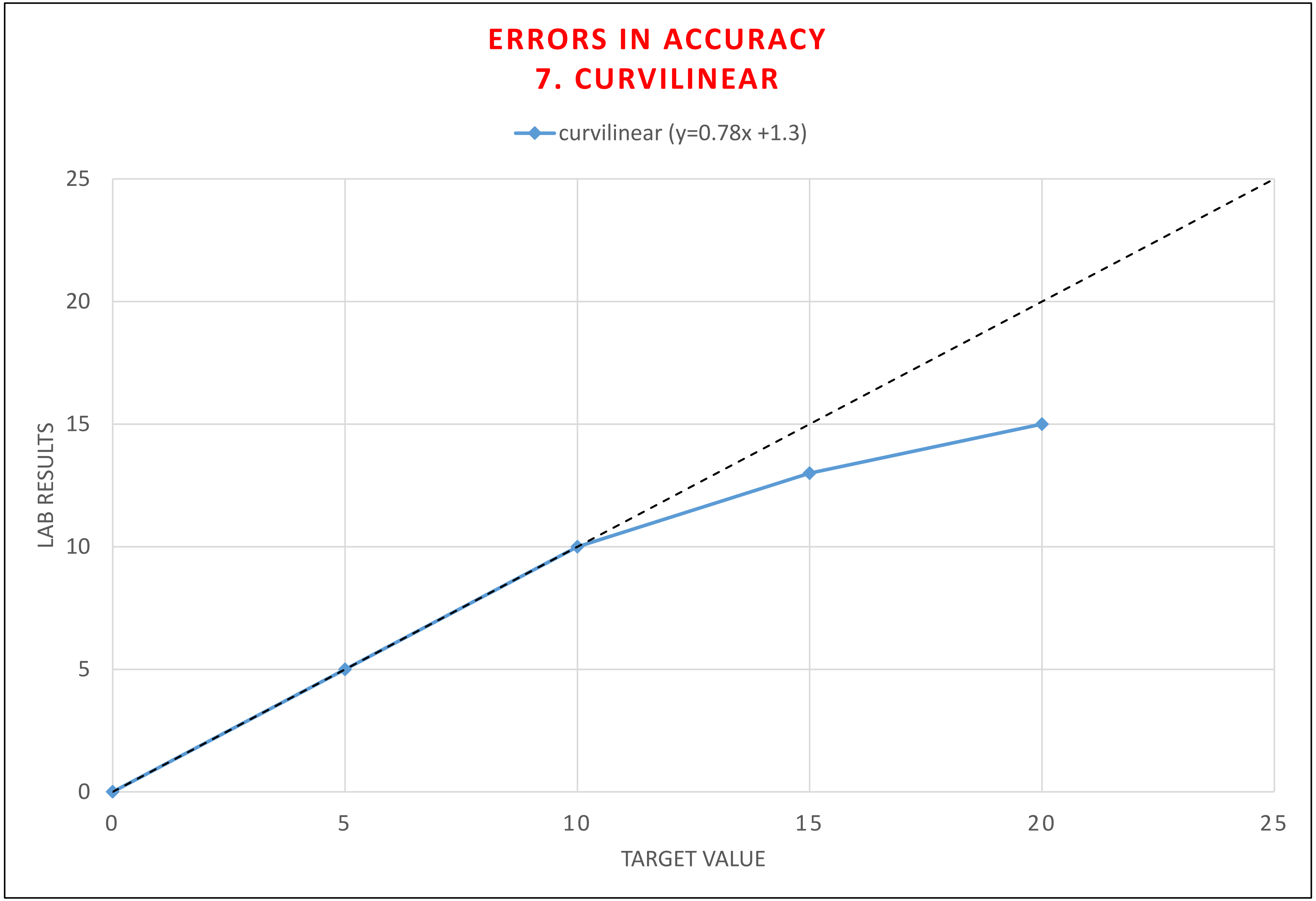


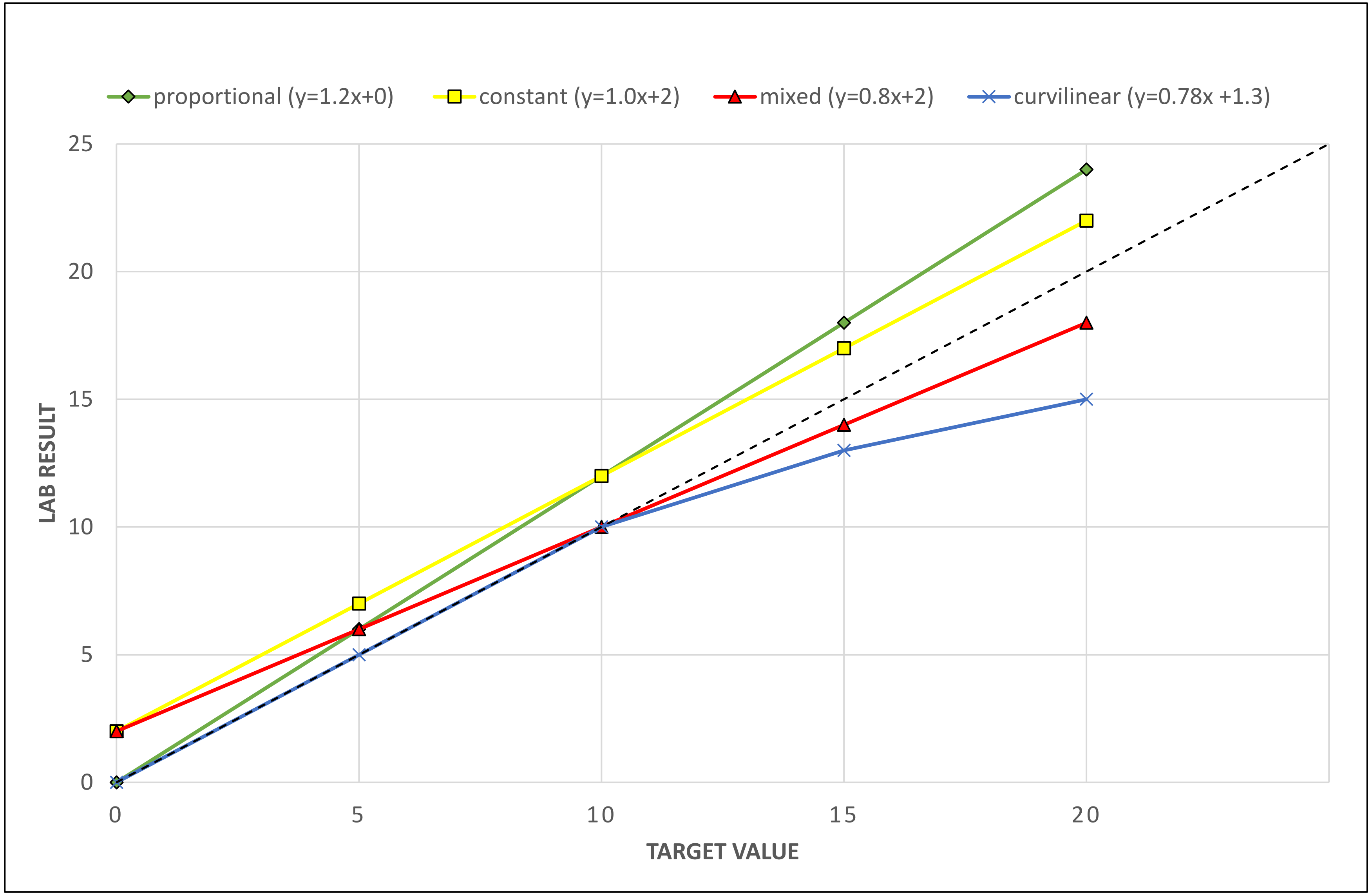
ERRORS IN ACCURACY
4. CONSTANT (POSITIVE BIAS)




ERRORS IN ACCURACY
5. CONSTANT (NEGATIVE BIAS)
constant (y=1x-2)
25
20
15
10
5
0
-5
LAB RESULT
0
5
10
15
20
25
TARGET VALUE


ERRORS IN ACCURACY
6. MIXED
mixed (y=1.2x-2)
LAB RESULT
25
20
15
10
5
0
-5
0
5
10
15
20
25
TARGET RESULT


ERRORS IN ACCURACY
7. CURVILINEAR
curvilinear (y=0.78x +1.3)
LAB RESULTS
TARGET VALUE
0
5
10
15
20
25
0
5
10
15
20
25


proportional (y=1.2x+0)
constant (y=1.0x+2)
mixed (y=0.8x+2)
curvilinear (y=0.78x +1.3)
LAB RESULT
0
5
10
15
20
25
TARGET VALUE
0
5
10
15
20

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How do we set Analytical Performance Specifications (APS) and Target Values?

The Weqas Report
Target values used in Statistical Analysis

Hierarchy

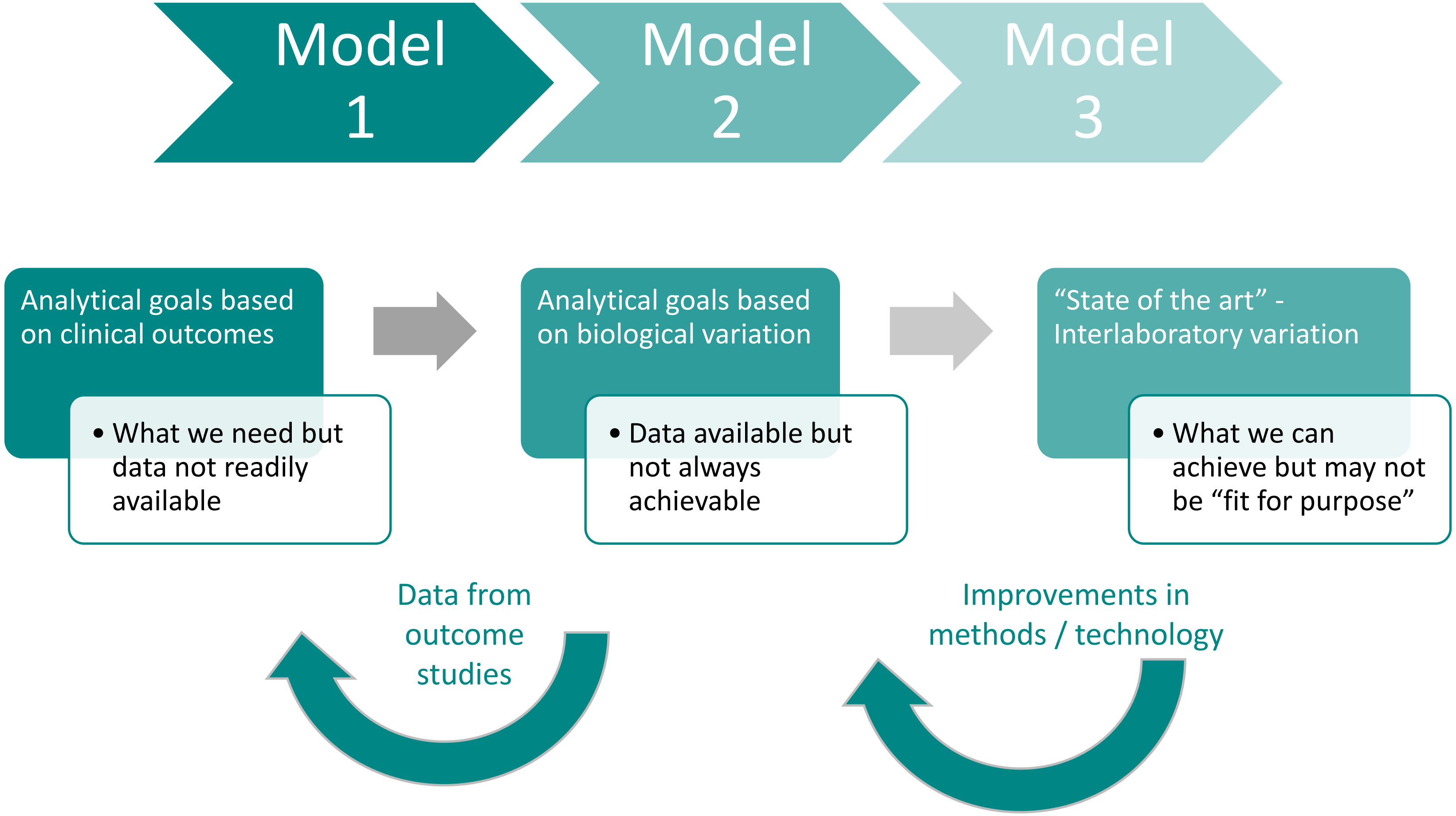
Reference values – used for bias plot & SDI / PI calculation

Method mean – used for SDI / PI calc if no ref value and n≥8

Overall mean – used for SDI / PI calc and bias plot if no ref value and n <8

Instrument mean – on report for information only

Hierarchy for setting APS



Model 1

Model 2

Model 3

Analytical goals based on clinical outcomes

- What we need but data not readily available

Analytical goals based on biological variation

- Data available but not always achievable

"State of the art" - Interlaboratory variation

- What we can achieve but may not be "fit for purpose"

Data from outcome studies

Improvements in methods / technology

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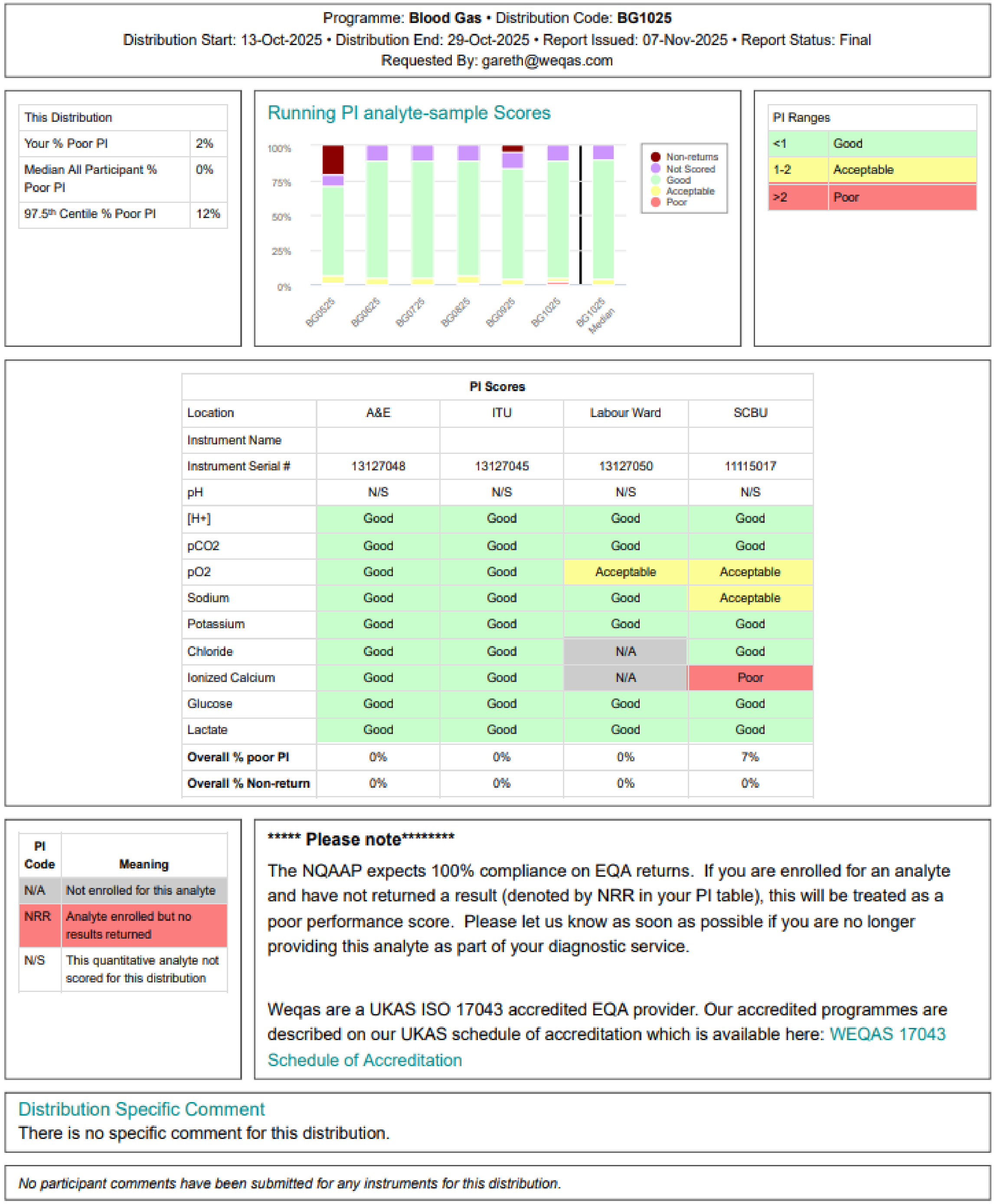
Weqas Connect Reports

Standard Quantitative Report – Managers Summary



Programme: **Blood Gas** • Distribution Code: **BG1025**
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final
Requested By: gareth@weqas.com

This Distribution	
Your % Poor PI	2%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	12%

Running PI analyte-sample Scores

PI Ranges	
<1	Good
1-2	Acceptable
>2	Poor

PI Scores				
Location	A&E	ITU	Labour Ward	SCBU
Instrument Name				
Instrument Serial #	13127048	13127045	13127050	11115017
pH	N/S	N/S	N/S	N/S
[H+]	Good	Good	Good	Good
pCO2	Good	Good	Good	Good
pO2	Good	Good	Acceptable	Acceptable
Sodium	Good	Good	Good	Acceptable
Potassium	Good	Good	Good	Good
Chloride	Good	Good	N/A	Good
Ionized Calcium	Good	Good	N/A	Poor
Glucose	Good	Good	Good	Good
Lactate	Good	Good	Good	Good
Overall % poor PI	0%	0%	0%	7%
Overall % Non-return	0%	0%	0%	0%

PI Code	**Meaning**
N/A	Not enrolled for this analyte
NRR	Analyte enrolled but no results returned
N/S	This quantitative analyte not scored for this distribution

******* Please note**********

The NQAAP expects 100% compliance on EQA returns. If you are enrolled for an analyte and have not returned a result (denoted by NRR in your PI table), this will be treated as a poor performance score. Please let us know as soon as possible if you are no longer providing this analyte as part of your diagnostic service.

Weqas are a UKAS ISO 17043 accredited EQA provider. Our accredited programmes are described on our UKAS schedule of accreditation which is available here: WEQAS 17043 Schedule of Accreditation

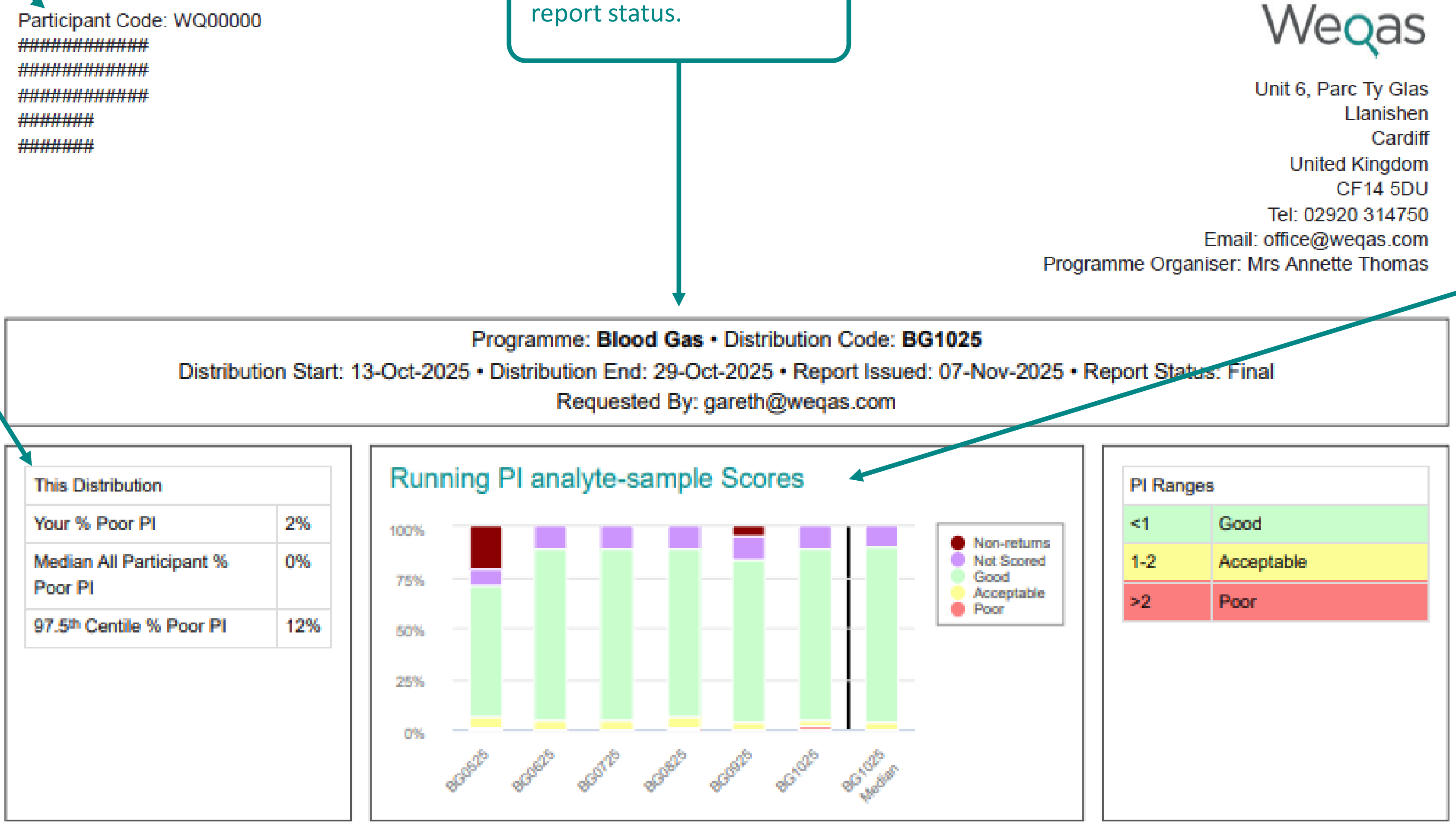
Distribution Specific Comment

There is no specific comment for this distribution.

No participant comments have been submitted for any instruments for this distribution.

Participant Code

Distribution details and report status.



Participant Code: WQ00000
############
############
############
#######
#######

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Programme Organiser: Mrs Annette Thomas

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Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final
Requested By: gareth@weqas.com

This Distribution	
Your % Poor PI	2%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	12%

Running PI analyte-sample Scores

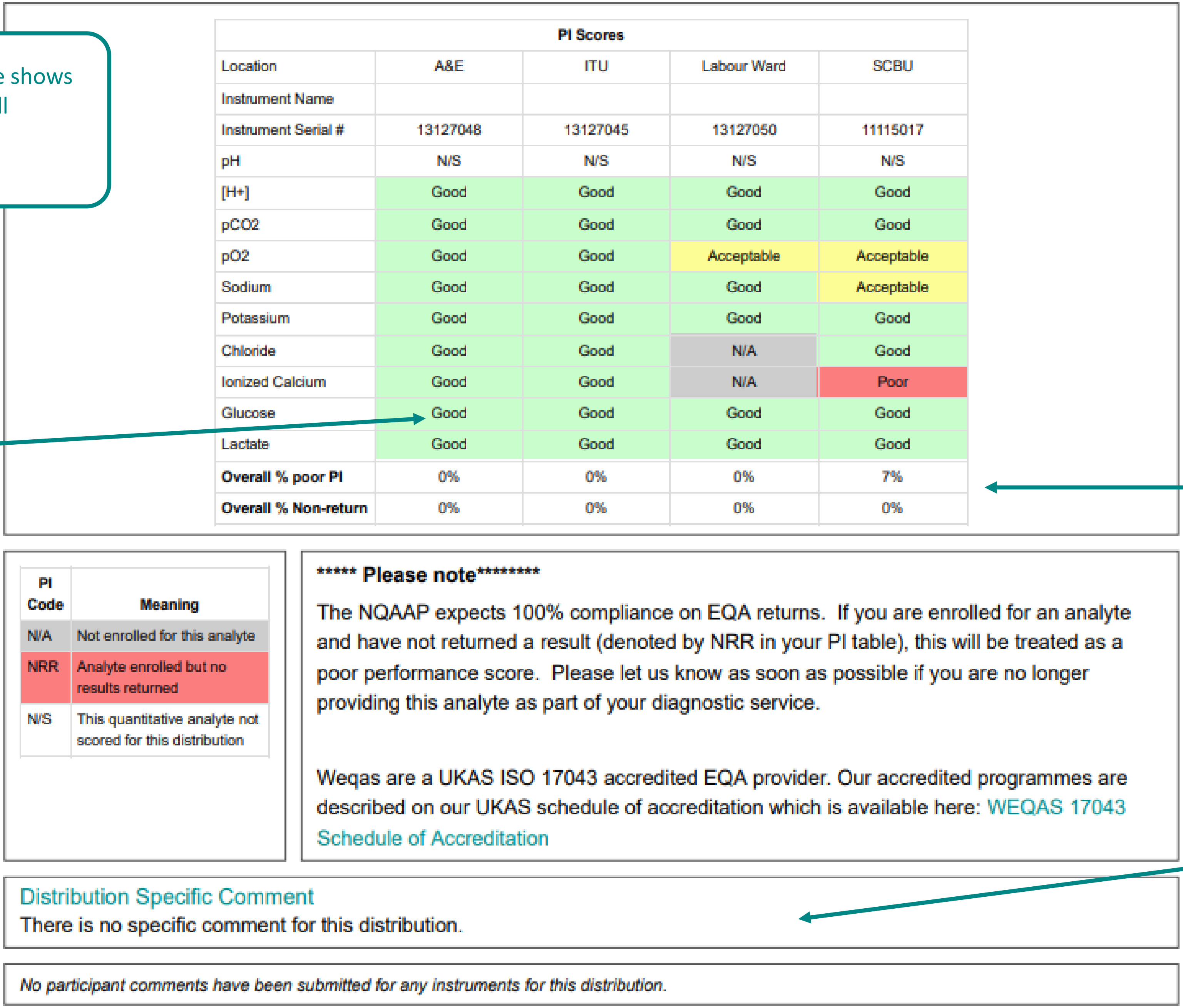
PI Ranges	
<1	Good
1-2	Acceptable
>2	Poor

Your % Poor PI (Performance Index) across all samples for all instruments, the Median All Participants % Poor PI and the 97.5th Centile % Poor PI.

The running table shows the current distribution PI scores, and the previous 5 distribution PI scores for all analytes, for your Participant Code, plus all-Participant Median performance.

The PI Scores table shows performance for all analytes and all instruments.

PI Scores are converted into performance categories and colour coded.



PI Scores				
Location	A&E	ITU	Labour Ward	SCBU
Instrument Name				
Instrument Serial #	13127048	13127045	13127050	11115017
pH	N/S	N/S	N/S	N/S
[H+]	Good	Good	Good	Good
pCO2	Good	Good	Good	Good
pO2	Good	Good	Acceptable	Acceptable
Sodium	Good	Good	Good	Acceptable
Potassium	Good	Good	Good	Good
Chloride	Good	Good	N/A	Good
Ionized Calcium	Good	Good	N/A	Poor
Glucose	Good	Good	Good	Good
Lactate	Good	Good	Good	Good
Overall % poor PI	0%	0%	0%	7%
Overall % Non-return	0%	0%	0%	0%

PI Code	Meaning
N/A	Not enrolled for this analyte
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N/S	This quantitative analyte not scored for this distribution

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Distribution Specific Comment

There is no specific comment for this distribution.

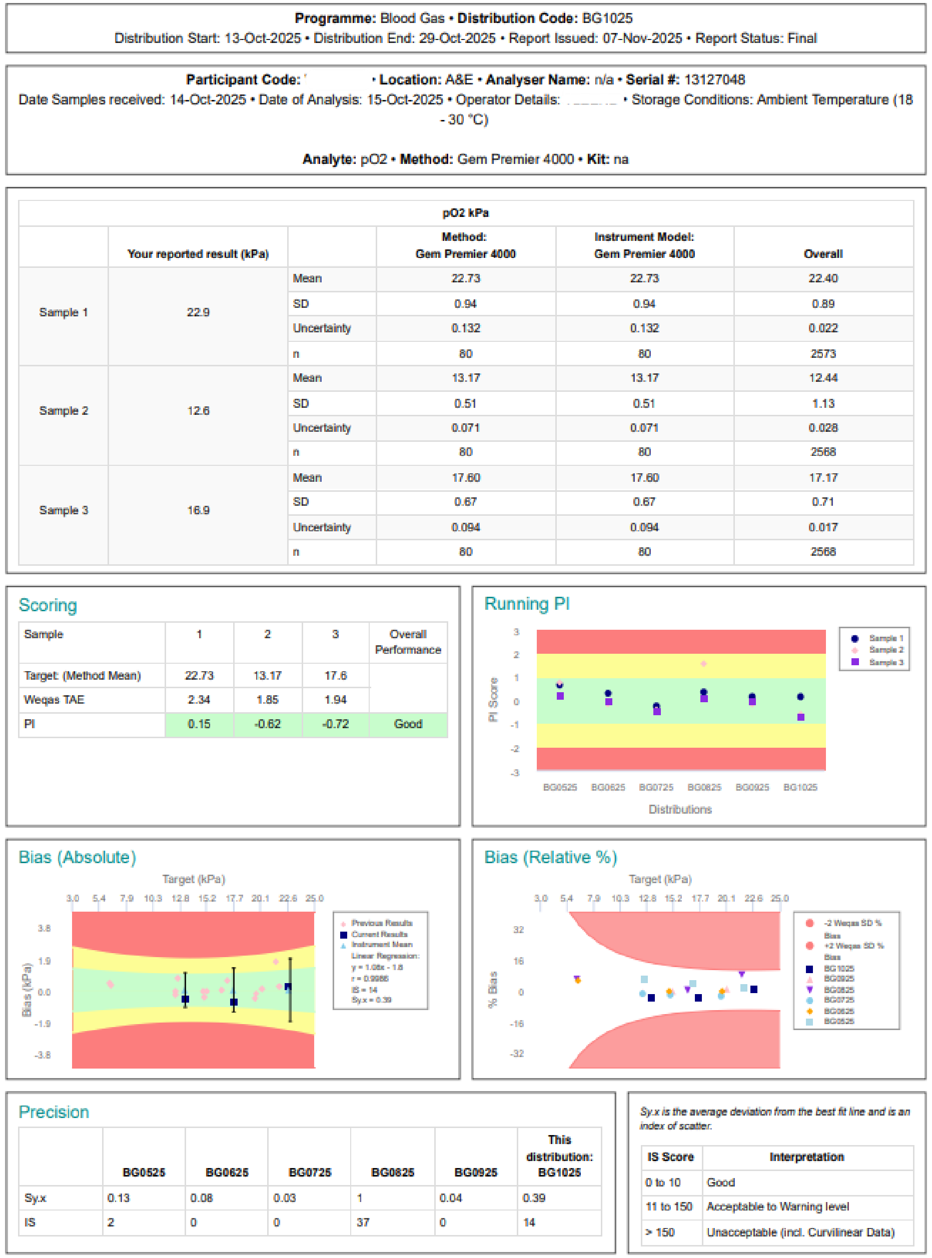
No participant comments have been submitted for any instruments for this distribution.

Overall % Poor PI across all analytes for each instrument, and Overall % non return for each instrument.

Any Weqas comments or Participants comments are shown here

Standard Quantitative Report – Analyte Page

Weqas



Programme: Blood Gas • **Distribution Code:** BG1025
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final

Participant Code: • **Location:** A&E • **Analyser Name:** n/a • **Serial #:** 13127048
Date Samples received: 14-Oct-2025 • Date of Analysis: 15-Oct-2025 • Operator Details: • Storage Conditions: Ambient Temperature (18 - 30 °C)

Analyte: pO2 • **Method:** Gem Premier 4000 • **Kit:** na

pO2 kPa

	Your reported result (kPa)		**Method: Gem Premier 4000**	**Instrument Model: Gem Premier 4000**	**Overall**
Sample 1	22.9	Mean	22.73	22.73	22.40
		SD	0.94	0.94	0.89
		Uncertainty	0.132	0.132	0.022
		n	80	80	2573
Sample 2	12.6	Mean	13.17	13.17	12.44
		SD	0.51	0.51	1.13
		Uncertainty	0.071	0.071	0.028
		n	80	80	2568
Sample 3	16.9	Mean	17.60	17.60	17.17
		SD	0.67	0.67	0.71
		Uncertainty	0.094	0.094	0.017
		n	80	80	2568

Scoring

Sample	1	2	3	Overall Performance
Target (Method Mean)	22.73	13.17	17.6	
Weqas TAE	2.34	1.85	1.94	
PI	0.15	-0.62	-0.72	Good

Running PI

Bias (Absolute)

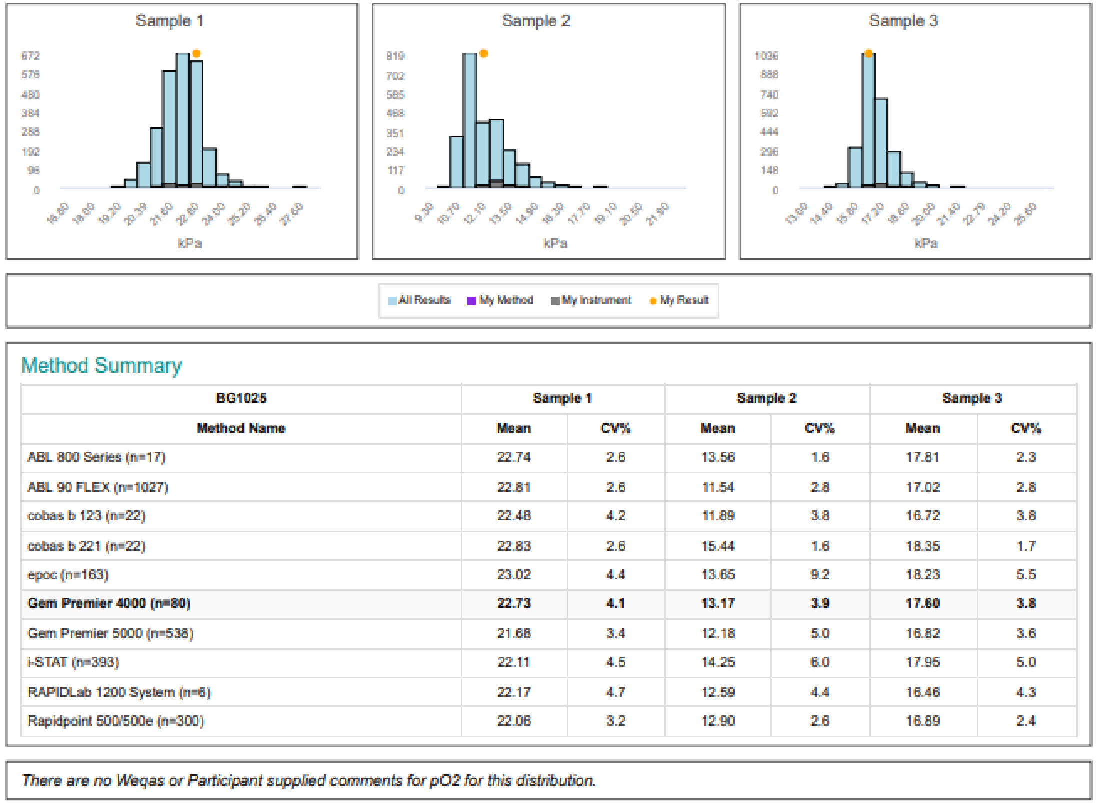
Bias (Relative %)

Precision

	BG0525	**BG0625**	**BG0725**	**BG0825**	**BG0925**	**This distribution: BG1025**
Sy.x	0.13	0.08	0.03	1	0.04	0.39
IS	2	0	0	37	0	14

Sy.x is the average deviation from the best fit line and is an index of scatter.

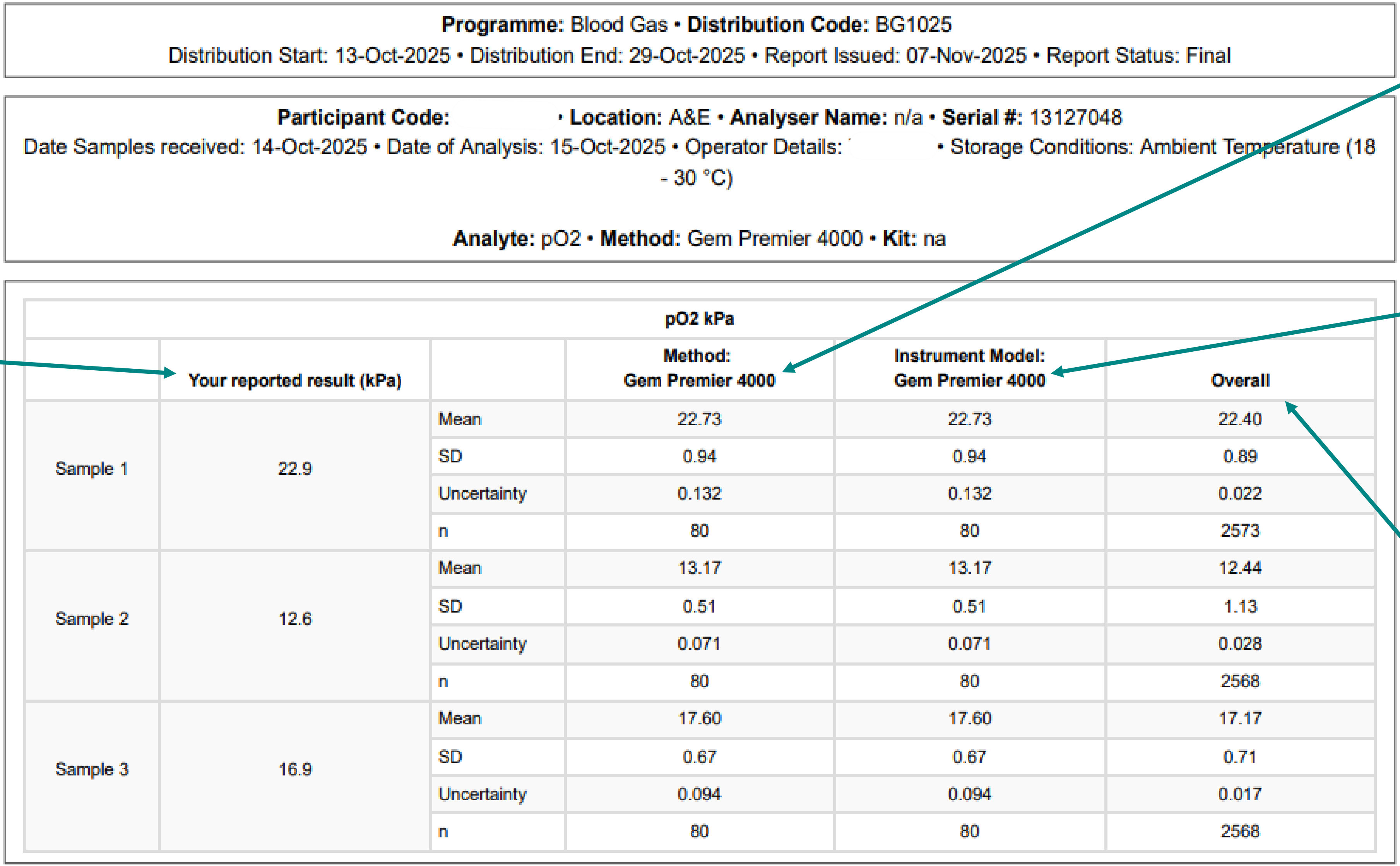
IS Score	**Interpretation**
0 to 10	Good
11 to 150	Acceptable to Warning level
> 150	Unacceptable (incl. Curvilinear Data)



Method Summary

BG1025	**Sample 1**		**Sample 2**		**Sample 3**	
Method Name	**Mean**	**CV%**	**Mean**	**CV%**	**Mean**	**CV%**
ABL 800 Series (n=17)	22.74	2.6	13.56	1.6	17.81	2.3
ABL 90 FLEX (n=1027)	22.81	2.6	11.54	2.8	17.02	2.8
cobas b 123 (n=22)	22.48	4.2	11.89	3.8	16.72	3.8
cobas b 221 (n=22)	22.83	2.6	15.44	1.6	18.35	1.7
epoc (n=163)	23.02	4.4	13.65	9.2	18.23	5.5
Gem Premier 4000 (n=80)	**22.73**	**4.1**	**13.17**	**3.9**	**17.60**	**3.8**
Gem Premier 5000 (n=538)	21.68	3.4	12.18	5.0	16.82	3.6
i-STAT (n=393)	22.11	4.5	14.25	6.0	17.95	5.0
RAPIDLab 1200 System (n=6)	22.17	4.7	12.59	4.4	16.46	4.3
Rapidpoint 500/500e (n=300)	22.06	3.2	12.90	2.6	16.89	2.4

There are no Weqas or Participant supplied comments for pO2 for this distribution.



Programme: Blood Gas • **Distribution Code:** BG1025
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final

Participant Code: • **Location:** A&E • **Analyser Name:** n/a • **Serial #:** 13127048
Date Samples received: 14-Oct-2025 • Date of Analysis: 15-Oct-2025 • Operator Details: • Storage Conditions: Ambient Temperature (18 - 30 °C)

Analyte: pO2 • **Method:** Gem Premier 4000 • **Kit:** na

pO2 kPa

	Your reported result (kPa)		**Method: Gem Premier 4000**	**Instrument Model: Gem Premier 4000**	**Overall**
Sample 1	22.9	Mean	22.73	22.73	22.40
		SD	0.94	0.94	0.89
		Uncertainty	0.132	0.132	0.022
		n	80	80	2573
Sample 2	12.6	Mean	13.17	13.17	12.44
		SD	0.51	0.51	1.13
		Uncertainty	0.071	0.071	0.028
		n	80	80	2568
Sample 3	16.9	Mean	17.60	17.60	17.17
		SD	0.67	0.67	0.71
		Uncertainty	0.094	0.094	0.017
		n	80	80	2568

Your reported results for each sample

Method Mean, SD, uncertainty and n

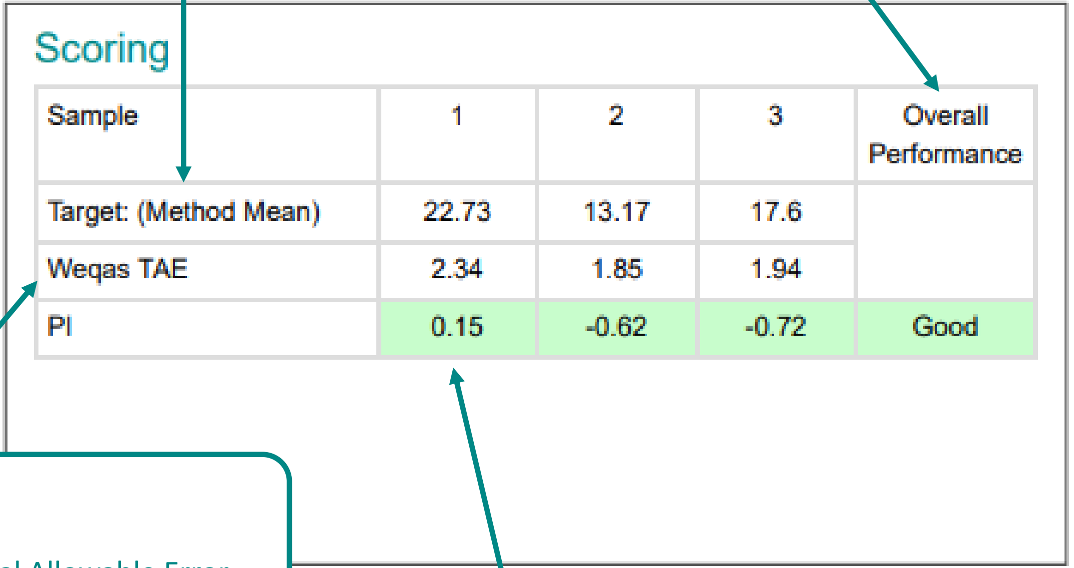
Instrument Mean, SD, uncertainty and n

Overall Mean, SD, uncertainty and n

Target Value: This will show whether you have been scored against Reference value, method mean or overall mean

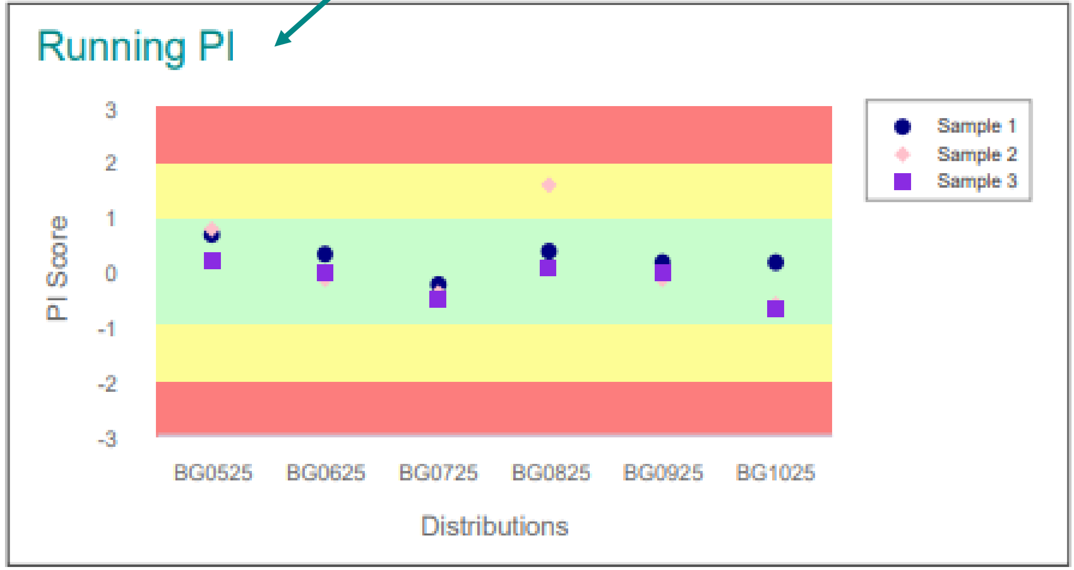
Overall Performance Category is assigned using an algorithm based on the individual sample PIs

Running PI chart shows the PI score for each sample for the current distribution and the last 5 distributions, with colour coding for each performance category



Scoring

Sample	1	2	3	Overall Performance
Target: (Method Mean)	22.73	13.17	17.6	
Weqas TAE	2.34	1.85	1.94	
PI	0.15	-0.62	-0.72	Good



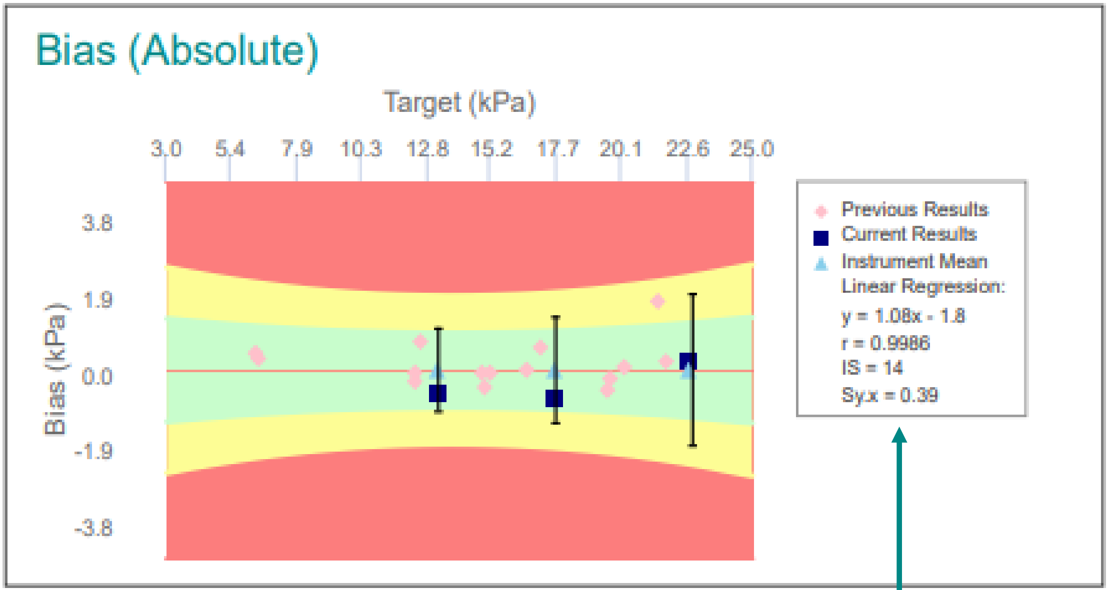
Weqas Total Allowable Error (TAE) (2 * Weqas SD)

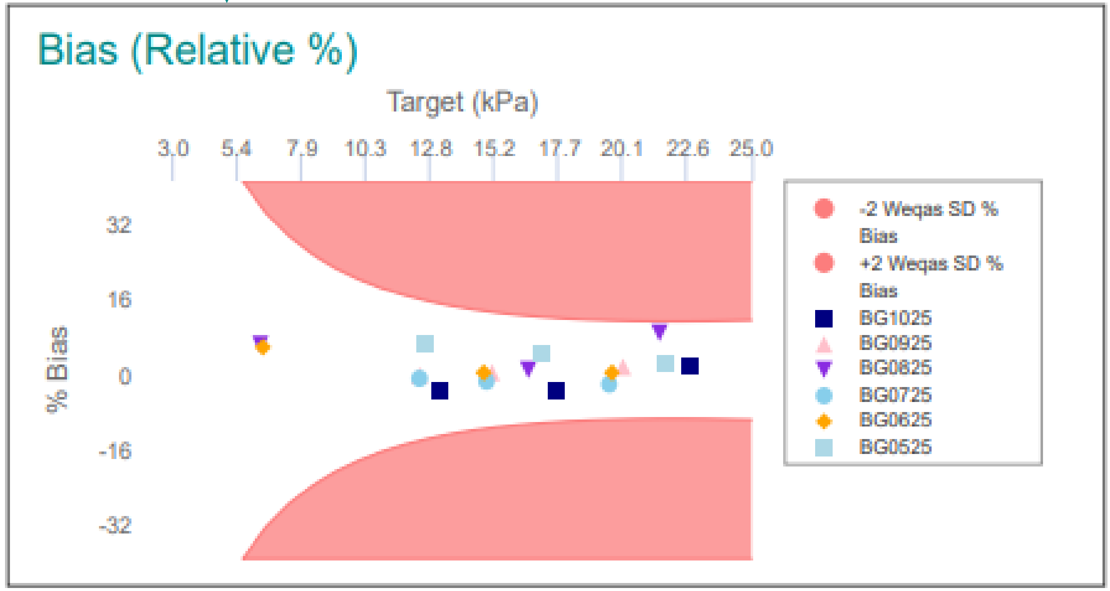
PI (Performance Index) score is shown for each sample

$$PI = \frac{\text{Reported Result – Target Value}}{\text{(Weqas TAE / 2)}}$$

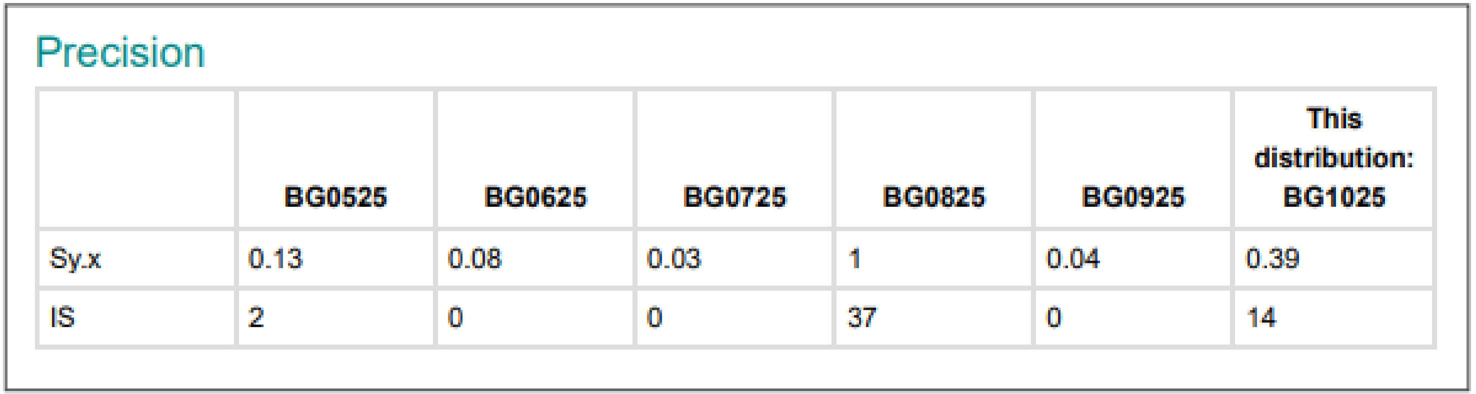
The bias (Absolute) plot shows absolute bias in Weqas standard units for each sample for the current distribution and 5 previous distributions

The bias (Relative) plot shows the relative (%) bias to the target valuer the current results and the 5 previous distributions



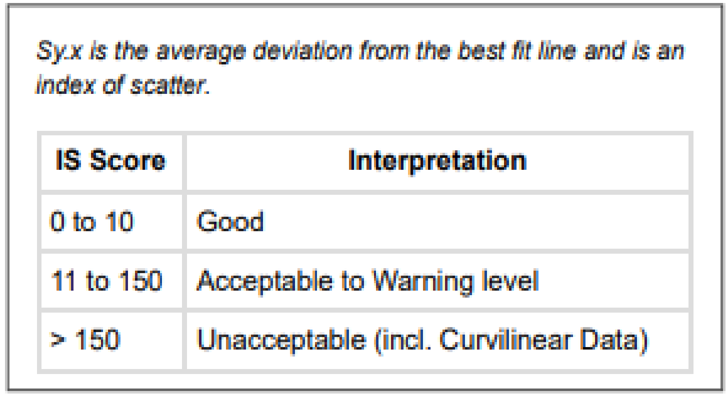


Linear regression analysis and indices of accuracy and precision are shown



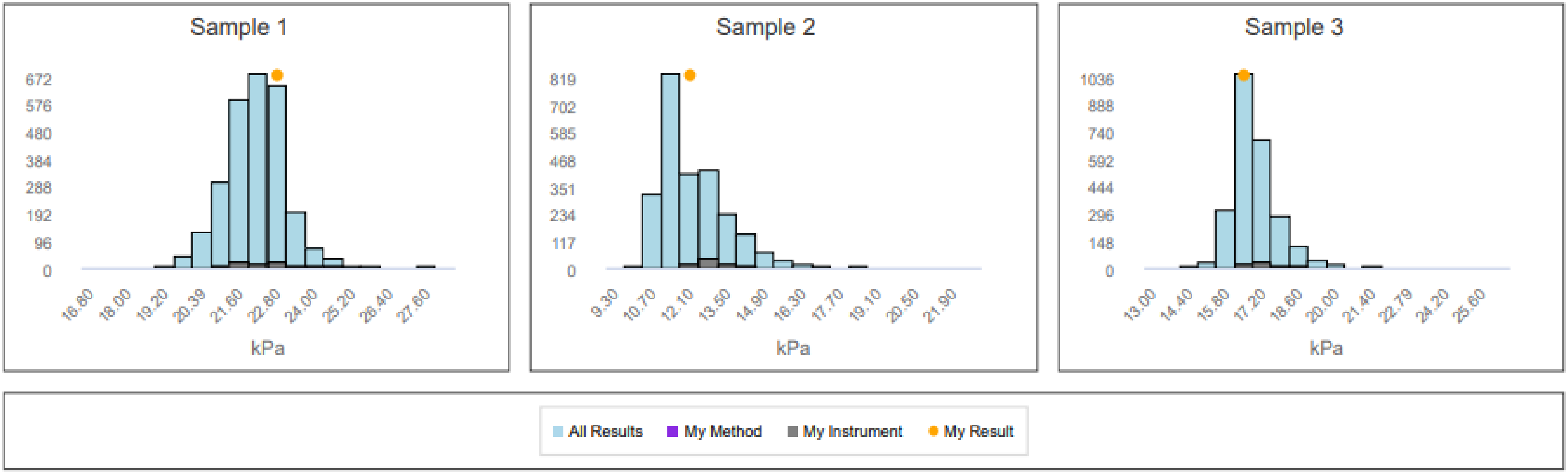
Precision

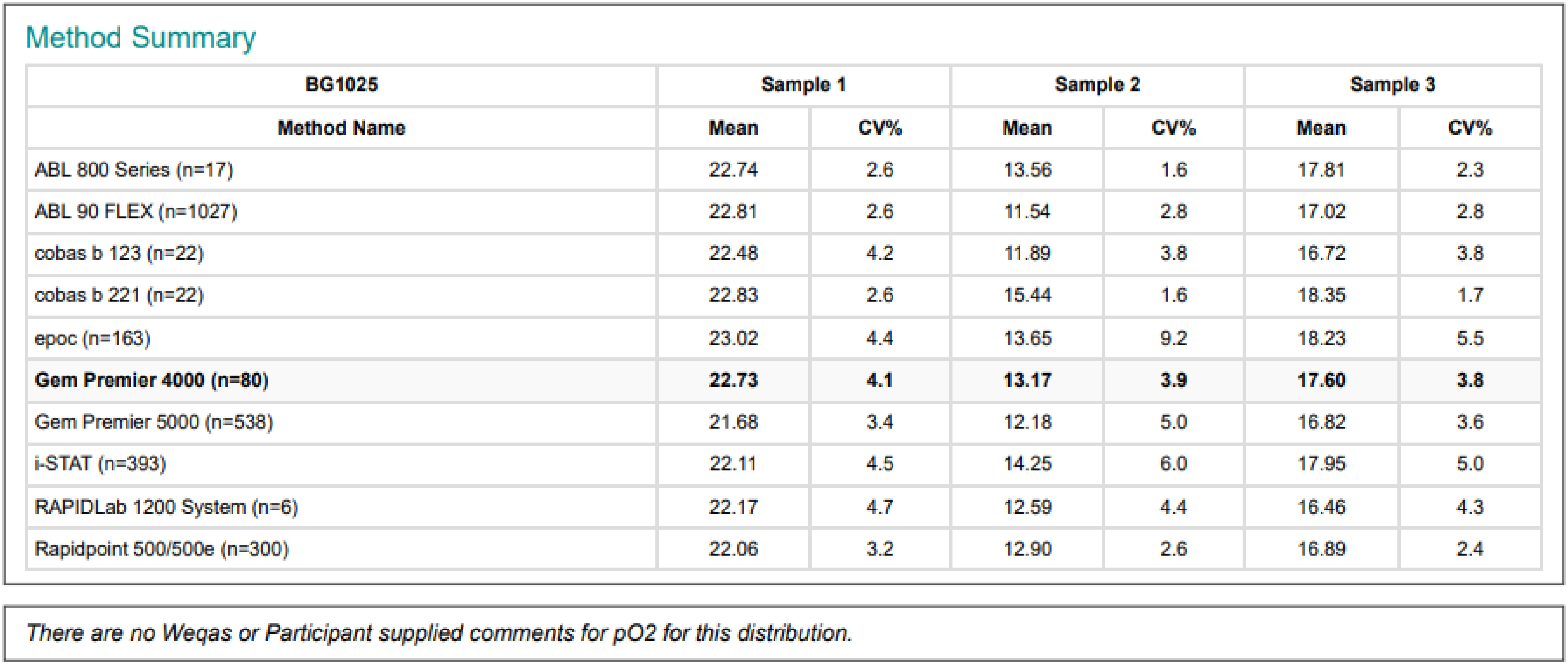
	BG0525	BG0625	BG0725	BG0825	BG0925	This distribution: BG1025
Sy.x	0.13	0.08	0.03	1	0.04	0.39
IS	2	0	0	37	0	14



Sy.x is the average deviation from the best fit line and is an index of scatter.

IS Score	Interpretation
0 to 10	Good
11 to 150	Acceptable to Warning level
> 150	Unacceptable (incl. Curvilinear Data)


Sample 1
672
576
480
384
288
192
96
0
16.80
18.00
19.20
20.39
21.60
22.80
24.00
25.20
26.40
27.60
kPa
Sample 2
819
702
585
468
351
234
117
0
9.30
10.70
12.10
13.50
14.90
16.30
17.70
19.10
20.50
21.90
kPa
Sample 3
1036
888
740
592
444
296
148
0
13.00
14.40
15.80
17.20
18.60
20.00
21.40
22.79
24.20
25.60
kPa
All Results
My Method
My Instrument
My Result



Method Summary

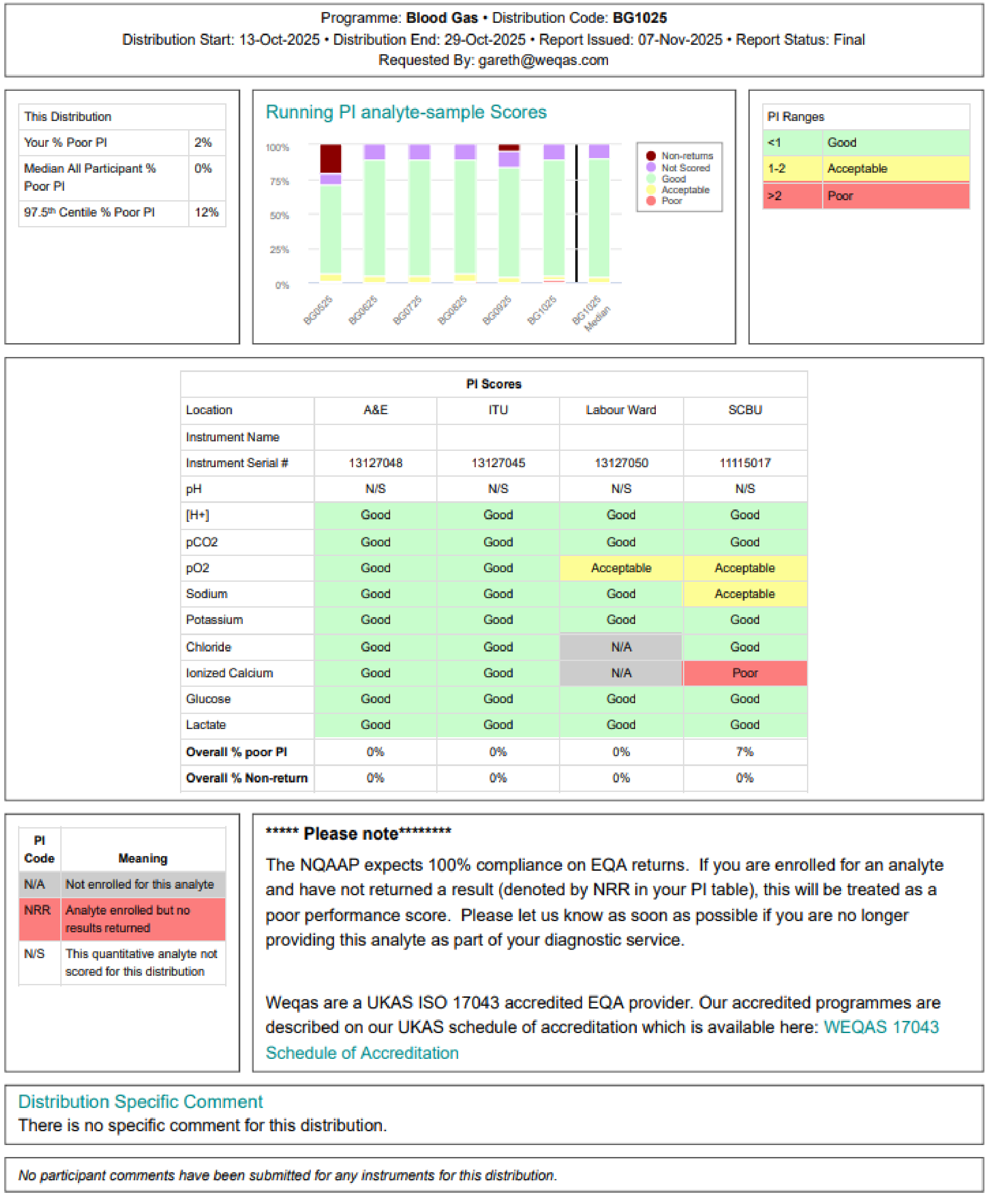
BG1025	Sample 1		Sample 2		Sample 3	
Method Name	**Mean**	**CV%**	**Mean**	**CV%**	**Mean**	**CV%**
ABL 800 Series (n=17)	22.74	2.6	13.56	1.6	17.81	2.3
ABL 90 FLEX (n=1027)	22.81	2.6	11.54	2.8	17.02	2.8
cobas b 123 (n=22)	22.48	4.2	11.89	3.8	16.72	3.8
cobas b 221 (n=22)	22.83	2.6	15.44	1.6	18.35	1.7
epoc (n=163)	23.02	4.4	13.65	9.2	18.23	5.5
Gem Premier 4000 (n=80)	**22.73**	**4.1**	**13.17**	**3.9**	**17.60**	**3.8**
Gem Premier 5000 (n=538)	21.68	3.4	12.18	5.0	16.82	3.6
i-STAT (n=393)	22.11	4.5	14.25	6.0	17.95	5.0
RAPIDLab 1200 System (n=6)	22.17	4.7	12.59	4.4	16.46	4.3
Rapidpoint 500/500e (n=300)	22.06	3.2	12.90	2.6	16.89	2.4

There are no Weqas or Participant supplied comments for pO2 for this distribution.

Overall Performance

Traffic light colour	Performance category	Description
Red	Non-Return	(Any number of samples in distribution) and (No results submitted for any samples)
	Poor	(Any number of sample in distribution) and (one or more $\lvert PI \rvert > 3$)
		(number of samples in distribution = 1) and ($2 < \lvert PI \rvert \leq 3$)
		(number of samples in distribution > 1) and (2 or more $\lvert PI \rvert > 2$) *(Westgard 2_{2s})*
		(number of samples in distribution > 1) AND (sign $x_i \neq$ sign x_j)] AND $\lvert x_i \rvert > 2$ AND $\lvert x_j \rvert > 2$ * for at least one pair of scores x_i and x_j where x_n with $i \neq j$ are the individual sample-analyte scores for the instrument in question *(Westgard R_{4s})*
Orange	Warning	(number of samples in distribution > 1) and (single sample with $2 < \lvert PI \rvert \leq 3$) and (no sample with $\lvert PI \rvert > 3$)
Yellow	Acceptable	(any number of samples in distribution) AND ($1 <$ Max $\lvert PI \rvert \leq 2$)
Green	Good	$\lvert PI \rvert < 1$ for all samples Green is only assigned if all the individual samples are good.

Simplified Report – Managers Summary



Programme: **Blood Gas** • Distribution Code: **BG1025**
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final
Requested By: gareth@weqas.com

This Distribution	
Your % Poor PI	2%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	12%

PI Ranges	
<1	Good
1-2	Acceptable
>2	Poor

PI Scores				
Location	A&E	ITU	Labour Ward	SCBU
Instrument Name				
Instrument Serial #	13127048	13127045	13127050	11115017
pH	N/S	N/S	N/S	N/S
[H+]	Good	Good	Good	Good
pCO2	Good	Good	Good	Good
pO2	Good	Good	Acceptable	Acceptable
Sodium	Good	Good	Good	Acceptable
Potassium	Good	Good	Good	Good
Chloride	Good	Good	N/A	Good
Ionized Calcium	Good	Good	N/A	Poor
Glucose	Good	Good	Good	Good
Lactate	Good	Good	Good	Good
Overall % poor PI	0%	0%	0%	7%
Overall % Non-return	0%	0%	0%	0%

PI Code	**Meaning**
N/A	Not enrolled for this analyte
NRR	Analyte enrolled but no results returned
N/S	This quantitative analyte not scored for this distribution

******* Please note**********

The NQAAP expects 100% compliance on EQA returns. If you are enrolled for an analyte and have not returned a result (denoted by NRR in your PI table), this will be treated as a poor performance score. Please let us know as soon as possible if you are no longer providing this analyte as part of your diagnostic service.

Weqas are a UKAS ISO 17043 accredited EQA provider. Our accredited programmes are described on our UKAS schedule of accreditation which is available here: WEQAS 17043 Schedule of Accreditation

Distribution Specific Comment

There is no specific comment for this distribution.

No participant comments have been submitted for any instruments for this distribution.

Participant Code

Participant Code: WQ00000
############
############
############
#######
#######

Distribution details and report status.

Unit 6, Parc Ty Glas
Llanishen
Cardiff
United Kingdom
CF14 5DU
Tel: 02920 314750
Email: office@weqas.com
Programme Organiser: Mrs Annette Thomas

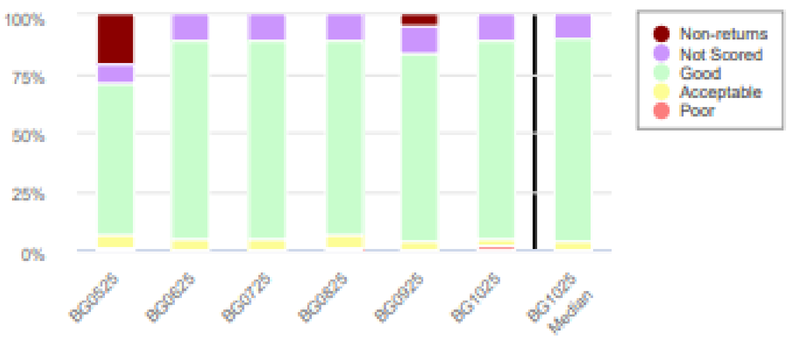
Programme: **Blood Gas** • Distribution Code: **BG1025**
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final
Requested By: gareth@weqas.com

Your % Poor PI (Performance Index) across all samples for all instruments, the Median All Participants % Poor PI and the 97.5th Centile % Poor PI.

This Distribution	
Your % Poor PI	2%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	12%

The running table shows the current distribution PI scores, and the previous 5 distribution PI scores for all analytes, for your Participant Code, plus all-Participant Median performance.

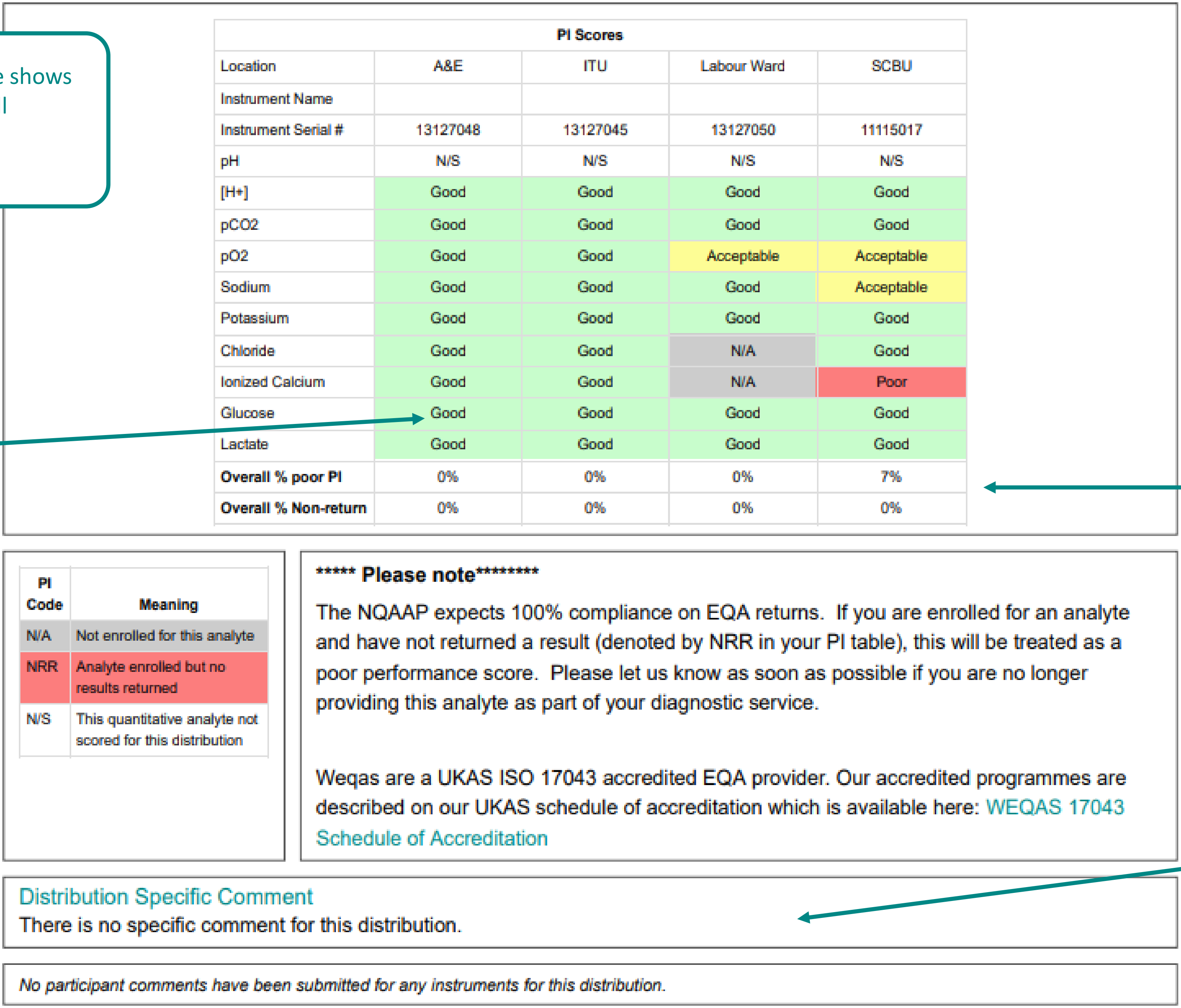
Running PI analyte-sample Scores



PI Ranges	
<1	Good
1-2	Acceptable
>2	Poor

The PI Scores table shows performance for all analytes and all instruments.

PI Scores are converted into performance categories and colour coded.



PI Scores				
Location	A&E	ITU	Labour Ward	SCBU
Instrument Name				
Instrument Serial #	13127048	13127045	13127050	11115017
pH	N/S	N/S	N/S	N/S
[H+]	Good	Good	Good	Good
pCO2	Good	Good	Good	Good
pO2	Good	Good	Acceptable	Acceptable
Sodium	Good	Good	Good	Acceptable
Potassium	Good	Good	Good	Good
Chloride	Good	Good	N/A	Good
Ionized Calcium	Good	Good	N/A	Poor
Glucose	Good	Good	Good	Good
Lactate	Good	Good	Good	Good
Overall % poor PI	0%	0%	0%	7%
Overall % Non-return	0%	0%	0%	0%

PI Code	**Meaning**
N/A	Not enrolled for this analyte
NRR	Analyte enrolled but no results returned
N/S	This quantitative analyte not scored for this distribution

******* Please note**********

The NQAAP expects 100% compliance on EQA returns. If you are enrolled for an analyte and have not returned a result (denoted by NRR in your PI table), this will be treated as a poor performance score. Please let us know as soon as possible if you are no longer providing this analyte as part of your diagnostic service.

Weqas are a UKAS ISO 17043 accredited EQA provider. Our accredited programmes are described on our UKAS schedule of accreditation which is available here: WEQAS 17043 Schedule of Accreditation

Distribution Specific Comment

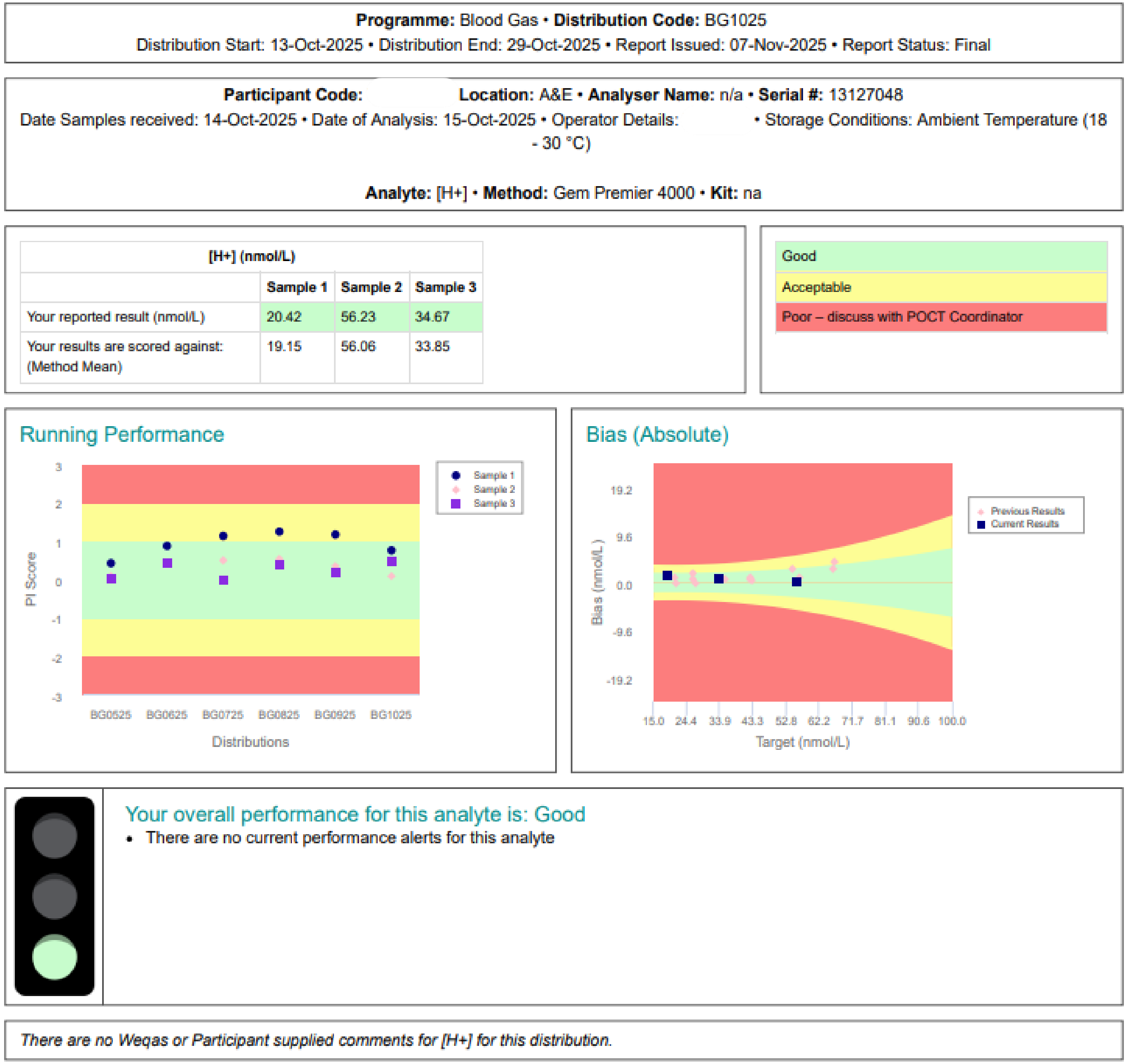
There is no specific comment for this distribution.

No participant comments have been submitted for any instruments for this distribution.

Overall % Poor PI across all analytes for each instrument, and Overall % non return for each instrument.

Any Weqas comments or Participants comments are shown here

Simplified Report – Analyte Page



Programme: Blood Gas • **Distribution Code:** BG1025
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final

Participant Code: **Location:** A&E • **Analyser Name:** n/a • **Serial #:** 13127048
Date Samples received: 14-Oct-2025 • Date of Analysis: 15-Oct-2025 • Operator Details: • Storage Conditions: Ambient Temperature (18 - 30 °C)

Analyte: [H+] • **Method:** Gem Premier 4000 • **Kit:** na

[H+] (nmol/L)			
	Sample 1	**Sample 2**	**Sample 3**
Your reported result (nmol/L)	20.42	56.23	34.67
Your results are scored against: (Method Mean)	19.15	56.06	33.85

- 🟩 Good
- 🟨 Acceptable
- 🟥 Poor – discuss with POCT Coordinator

Running Performance

Bias (Absolute)

Your overall performance for this analyte is: Good

- There are no current performance alerts for this analyte

There are no Weqas or Participant supplied comments for [H+] for this distribution.

Reports are very interactive.

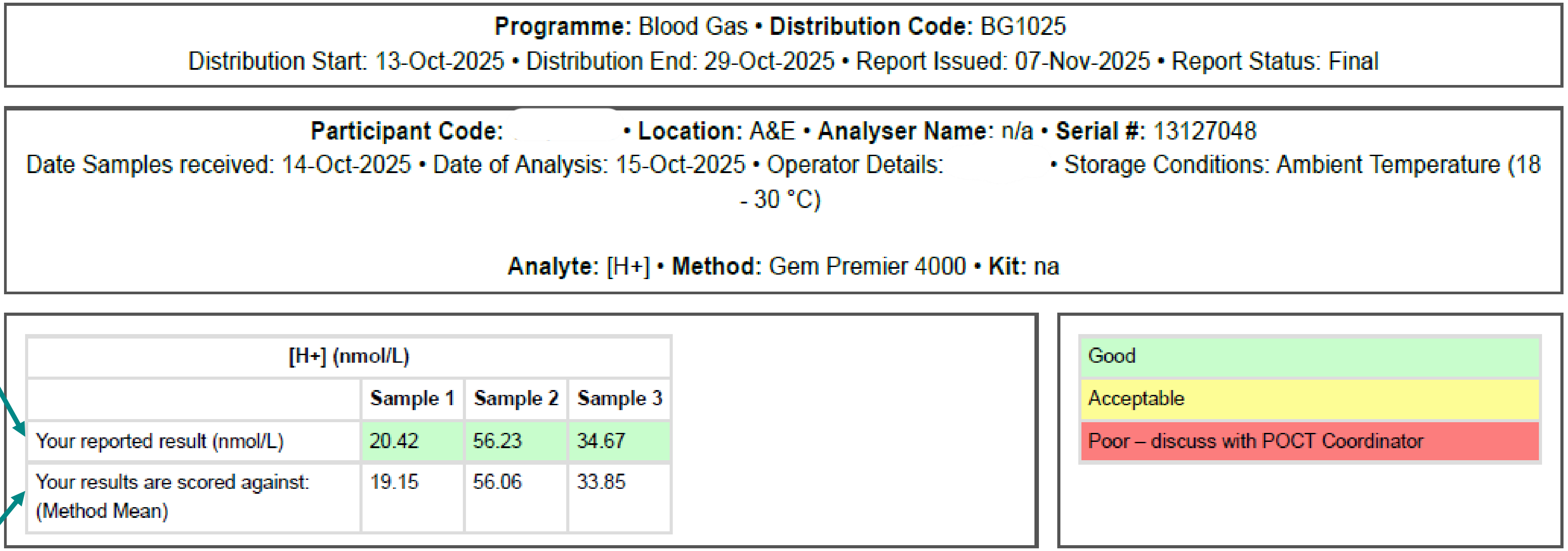
You can hover over various parts of any of the graphical displays within the reports to focus in on the element you wish to see.

Sign in - Weqas Connect

Simplified Reports

‘Your reported result’ will be shown in the units entered, in the Weqas standard units (if units entered are different from the Weqas standard units), and method corrected result (if appropriate for the analyte).

This will show whether you have been scored against Reference Value, Method Mean or Overall Mean and the actual target value will be shown here.



Programme: Blood Gas • **Distribution Code:** BG1025
Distribution Start: 13-Oct-2025 • Distribution End: 29-Oct-2025 • Report Issued: 07-Nov-2025 • Report Status: Final

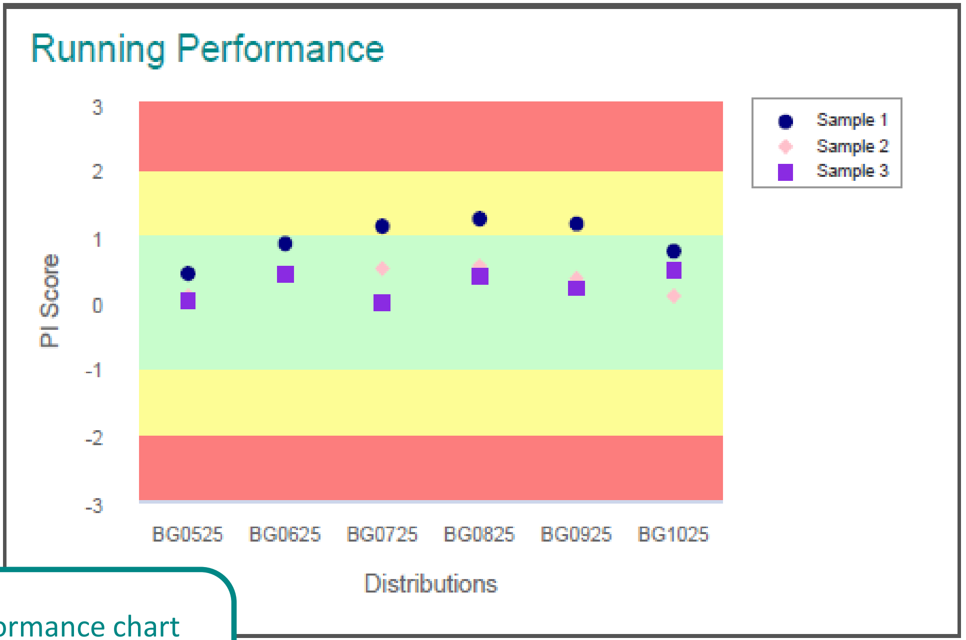
Participant Code: • **Location:** A&E • **Analyser Name:** n/a • **Serial #:** 13127048
Date Samples received: 14-Oct-2025 • Date of Analysis: 15-Oct-2025 • Operator Details: • Storage Conditions: Ambient Temperature (18 - 30 °C)

Analyte: [H+] • **Method:** Gem Premier 4000 • **Kit:** na

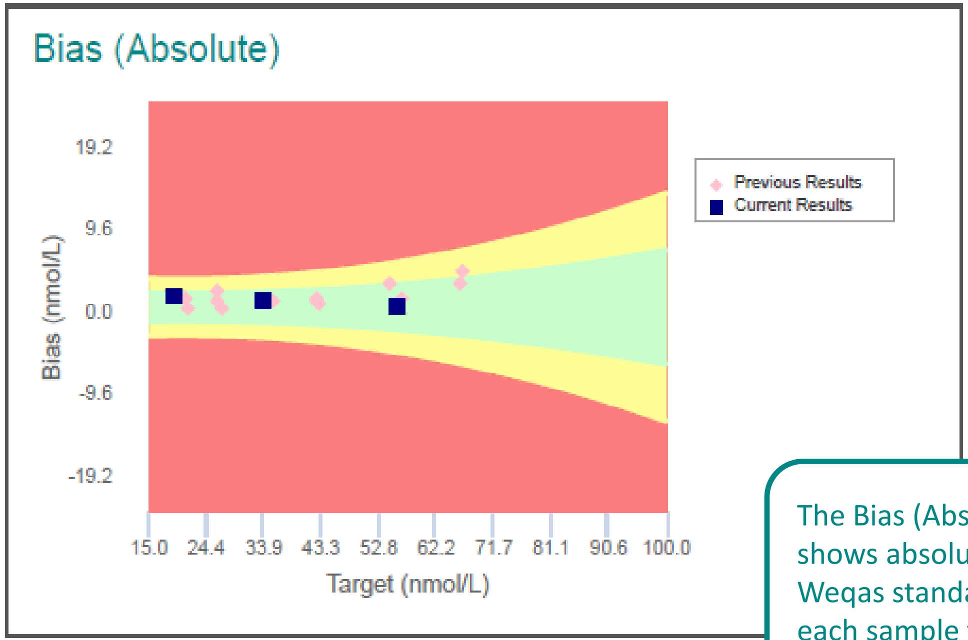
[H+] (nmol/L)			
	Sample 1	**Sample 2**	**Sample 3**
Your reported result (nmol/L)	🟩 20.42	🟩 56.23	🟩 34.67
Your results are scored against: (Method Mean)	19.15	56.06	33.85

🟩 Good
🟨 Acceptable
🟥 Poor – discuss with POCT Coordinator

Simplified Reports



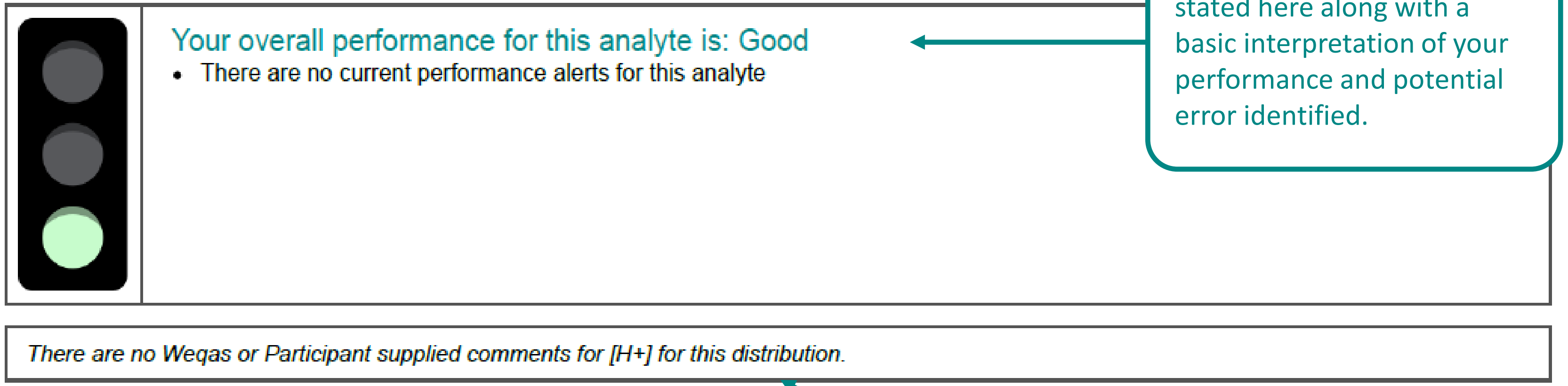
Running Performance chart shows the PI (Performance Index) score for each sample for the current distribution and the last 5 distributions, with colour coding for each performance category.



The Bias (Absolute) Plot shows absolute bias in Weqas standard units for each sample for the current distribution. The x-axis is the target value; if the target value is a Reference Value or the Overall Mean, your Method Means will be plotted.

Simplified Reports

Overall Performance is shown as a ‘Traffic light’, with performance colour coded to easily identify the performance category.



Your overall performance for this analyte is: Good

- There are no current performance alerts for this analyte

There are no Weqas or Participant supplied comments for [H+] for this distribution.

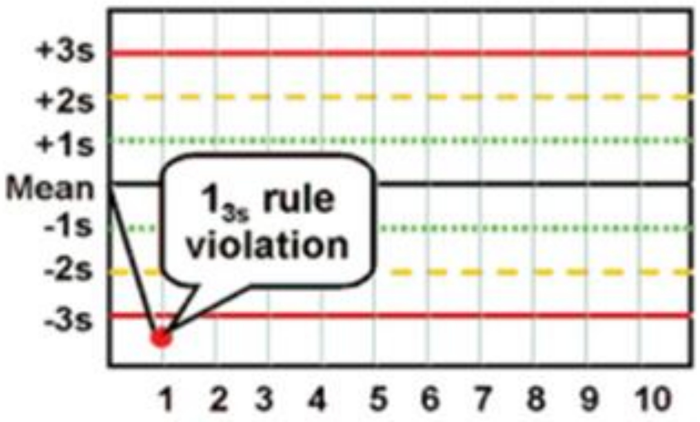
Overall Performance is stated here along with a basic interpretation of your performance and potential error identified.

Analyte Specific Comments from Weqas or participant.

Performance Comments

Your results for this distribution are acceptable
You have at least one sample in this distribution with a poor score: |score| > 2
You have at least two samples in this distribution with a poor score: |score| > 2
Your results show a consistent bias.
Please discuss your results with your EQA officer / POCT Co-ordinator
There are no current performance alerts for this analyte
Non-compliance: you have not reported results for this analyte
You have at least one sample in this distribution with a very poor score: |score| > 3
Your results suggest a potential bias
You have poor performance for this distribution due to a mixed positive and negative bias
Scoring is currently unavailable for your reported results
You have a poor score for this distribution: |score| > 2

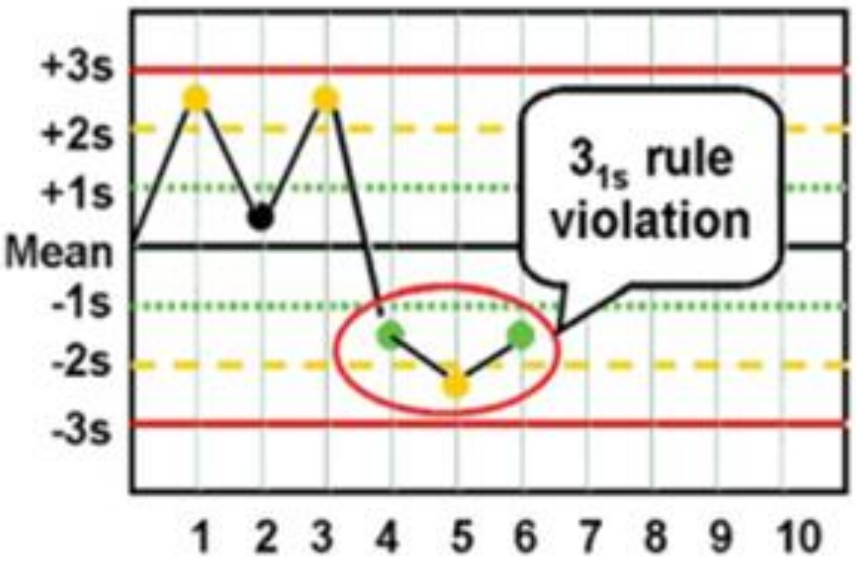
Examples of rules used for the Performance Alert



Comment:
You have at least one sample in this distribution
with a very poor score: |score| > 3

Comment:
You have at least two samples in this distribution
with a poor score: |score| > 2

Consistent Bias



Comment:
Your results show a consistent bias.

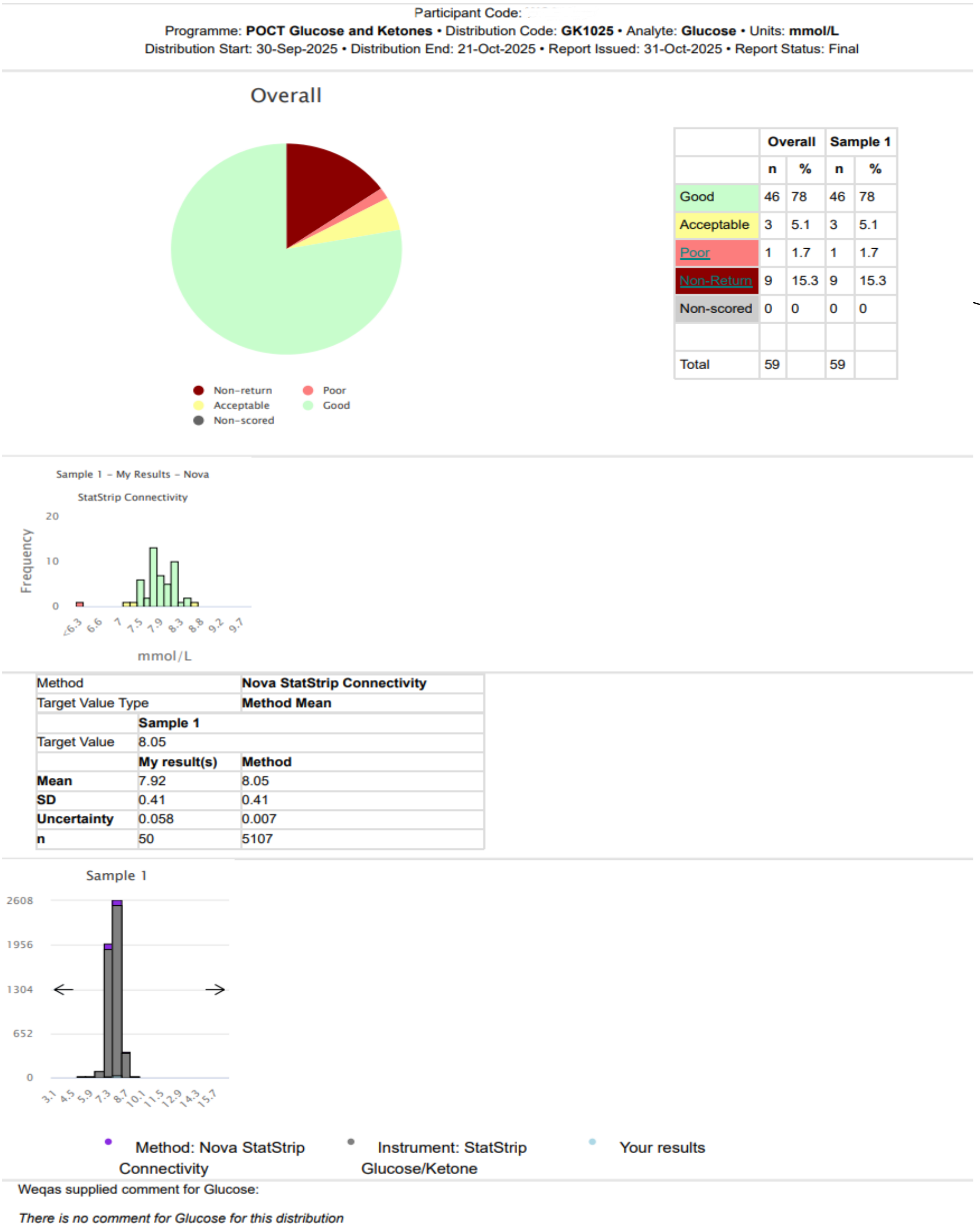
The rule is used when the distribution has a set of 3 or more samples.

If the PI (Performance Index) for all samples is >1 OR PI for all samples < -1

The rule does not show whether the bias is positive or negative, but indicates that there is a bias to be investigated.

This example shows a negative bias.

POCT Co-ordinators Report



Participant Code: [redacted]

Programme: **POCT Glucose and Ketones** • Distribution Code: **GK1025** • Analyte: **Glucose** • Units: **mmol/L**

Distribution Start: 30-Sep-2025 • Distribution End: 21-Oct-2025 • Report Issued: 31-Oct-2025 • Report Status: Final

Overall

	Overall		**Sample 1**	
	n	**%**	**n**	**%**
Good	46	78	46	78
Acceptable	3	5.1	3	5.1
Poor	1	1.7	1	1.7
Non-Return	9	15.3	9	15.3
Non-scored	0	0	0	0
Total	59		59	

Sample 1 – My Results – Nova StatStrip Connectivity

Method	**Nova StatStrip Connectivity**	
Target Value Type	**Method Mean**	
	Sample 1	
Target Value	8.05	
	My result(s)	**Method**
Mean	7.92	8.05
SD	0.41	0.41
Uncertainty	0.058	0.007
n	50	5107

Sample 1

● Method: Nova StatStrip Connectivity ● Instrument: StatStrip Glucose/Ketone ● Your results

Weqas supplied comment for Glucose:

There is no comment for Glucose for this distribution

Hyperlinks on 'Poor' and 'Non Returns' to take you to further information.

Reports are very interactive.

You can hover over various parts of any of the graphical displays within the reports to focus in on the element you wish to see.

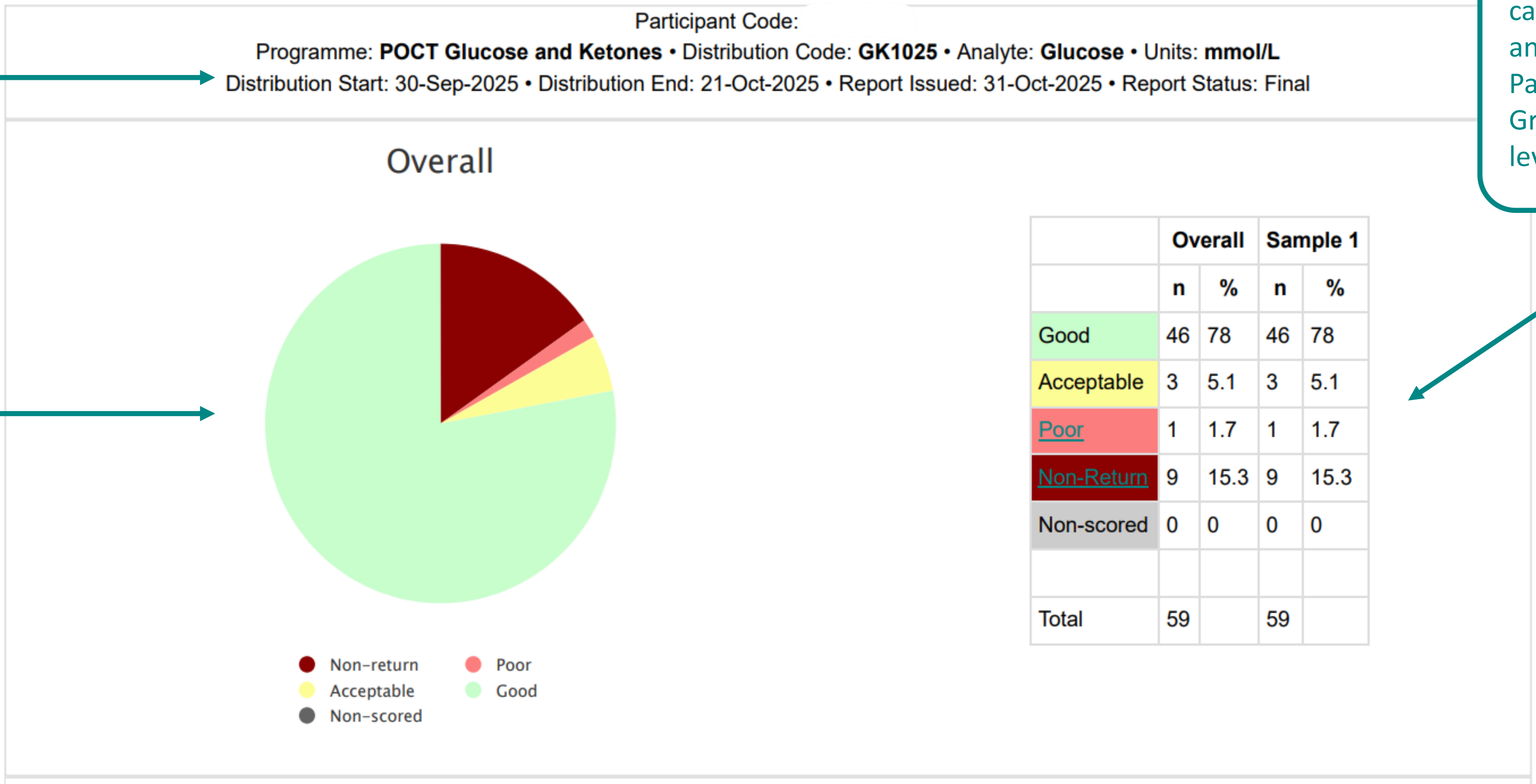
Sign in - Weqas Connect

POCT Co-ordinators Report

Participant Code, Distribution details and report status.

Analyte specific breakdown of performance categories for all samples.

Numerical analyte specific breakdown of performance categories for each sample and overall for your Participant, Group or Super Group dependent on access level and report chosen.



Participant Code:

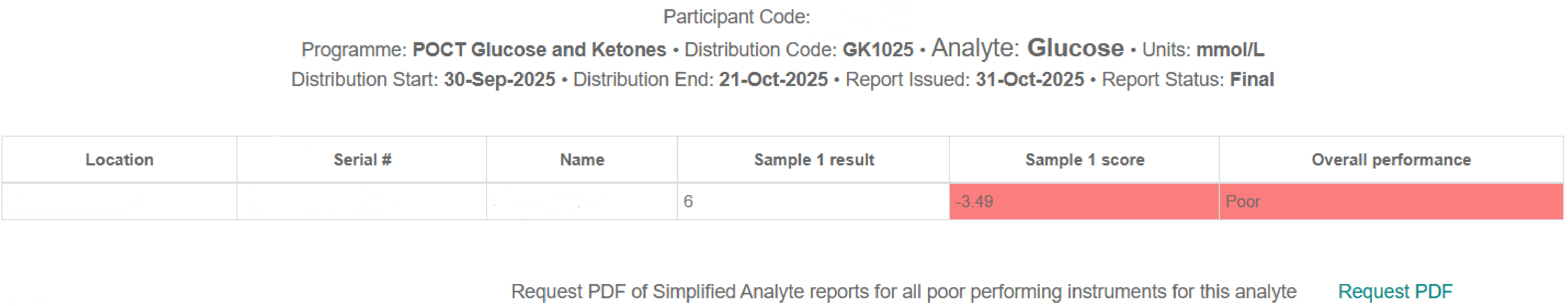
Programme: **POCT Glucose and Ketones** • Distribution Code: **GK1025** • Analyte: **Glucose** • Units: **mmol/L**

Distribution Start: 30-Sep-2025 • Distribution End: 21-Oct-2025 • Report Issued: 31-Oct-2025 • Report Status: Final

Overall

	Overall		**Sample 1**	
	n	**%**	**n**	**%**
Good	46	78	46	78
Acceptable	3	5.1	3	5.1
Poor	1	1.7	1	1.7
Non-Return	9	15.3	9	15.3
Non-scored	0	0	0	0
Total	59		59	

Poor Performance report from Hyperlink



Participant Code:

Programme: **POCT Glucose and Ketones** • Distribution Code: **GK1025** • Analyte: **Glucose** • Units: **mmol/L**

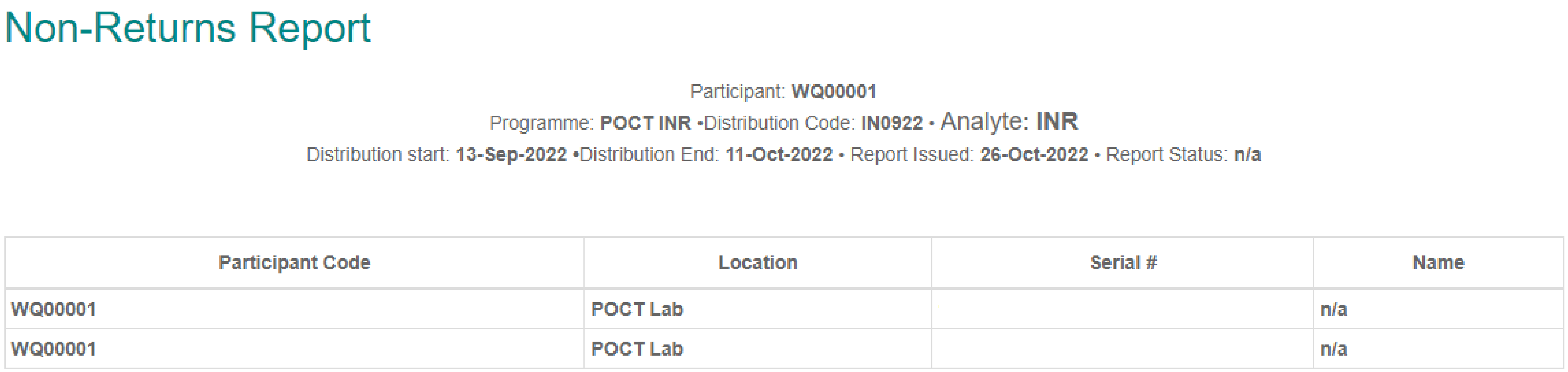
Distribution Start: **30-Sep-2025** • Distribution End: **21-Oct-2025** • Report Issued: **31-Oct-2025** • Report Status: **Final**

Location	**Serial #**	**Name**	**Sample 1 result**	**Sample 1 score**	**Overall performance**
			6	-3.49	Poor

Request PDF of Simplified Analyte reports for all poor performing instruments for this analyte Request PDF

PDF will be created only for the sites that have poor performance to allow full review of the individual reports.

Non-Returns report from Hyperlink



Non-Returns Report

Participant: **WQ00001**

Programme: **POCT INR** •Distribution Code: **IN0922** • Analyte: **INR**

Distribution start: **13-Sep-2022** •Distribution End: **11-Oct-2022** • Report Issued: **26-Oct-2022** • Report Status: **n/a**

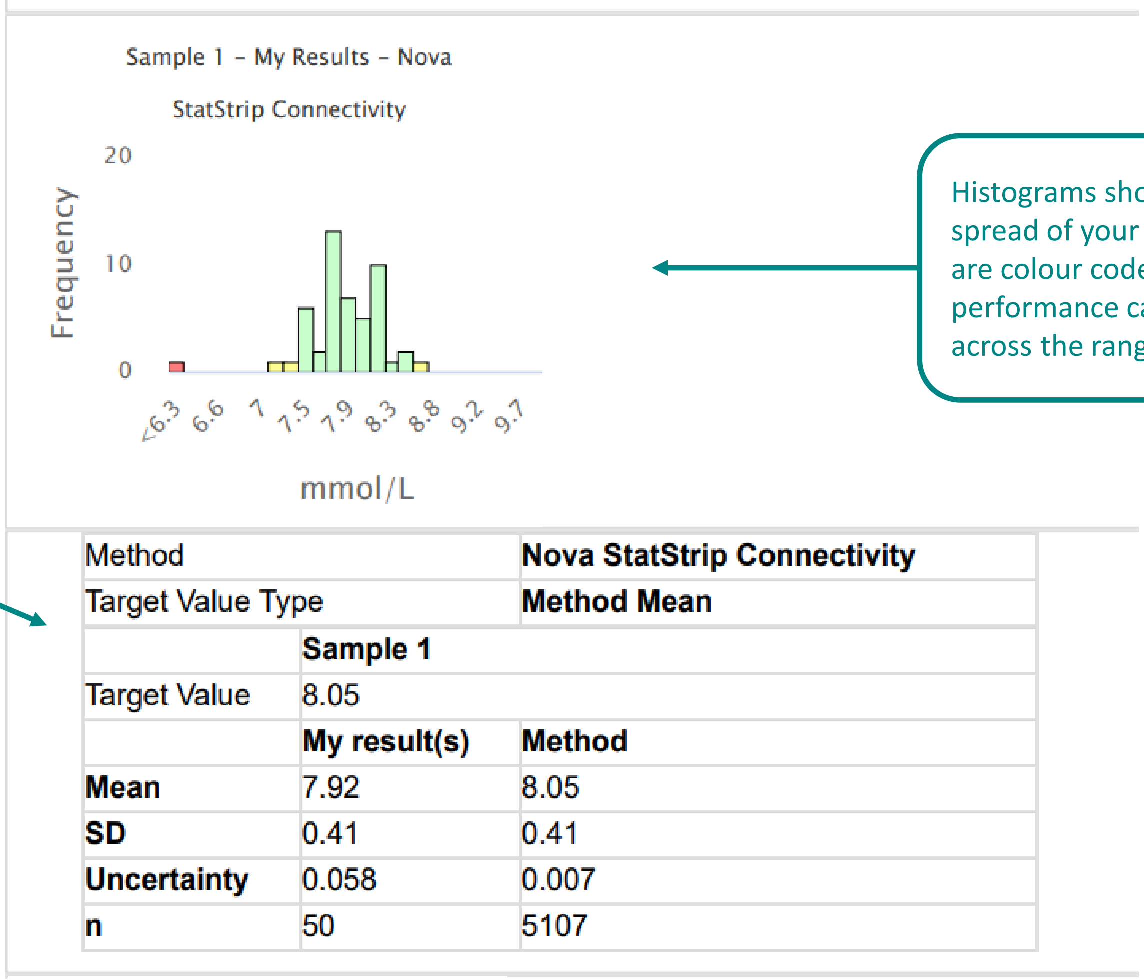
Participant Code	Location	Serial #	Name
WQ00001	POCT Lab		n/a
WQ00001	POCT Lab		n/a

POCT Co-ordinators Report

Method specific data table showing:

- Target Value to which the submitted result is compared against and Target Value type e.g. Method Mean.
- Mean and SD of your submitted results for this method / instrument.
- Method data (all participants within this method) is also supplied in the right-hand column.

If you have more than one meter type, this data will be shown in a separate table.

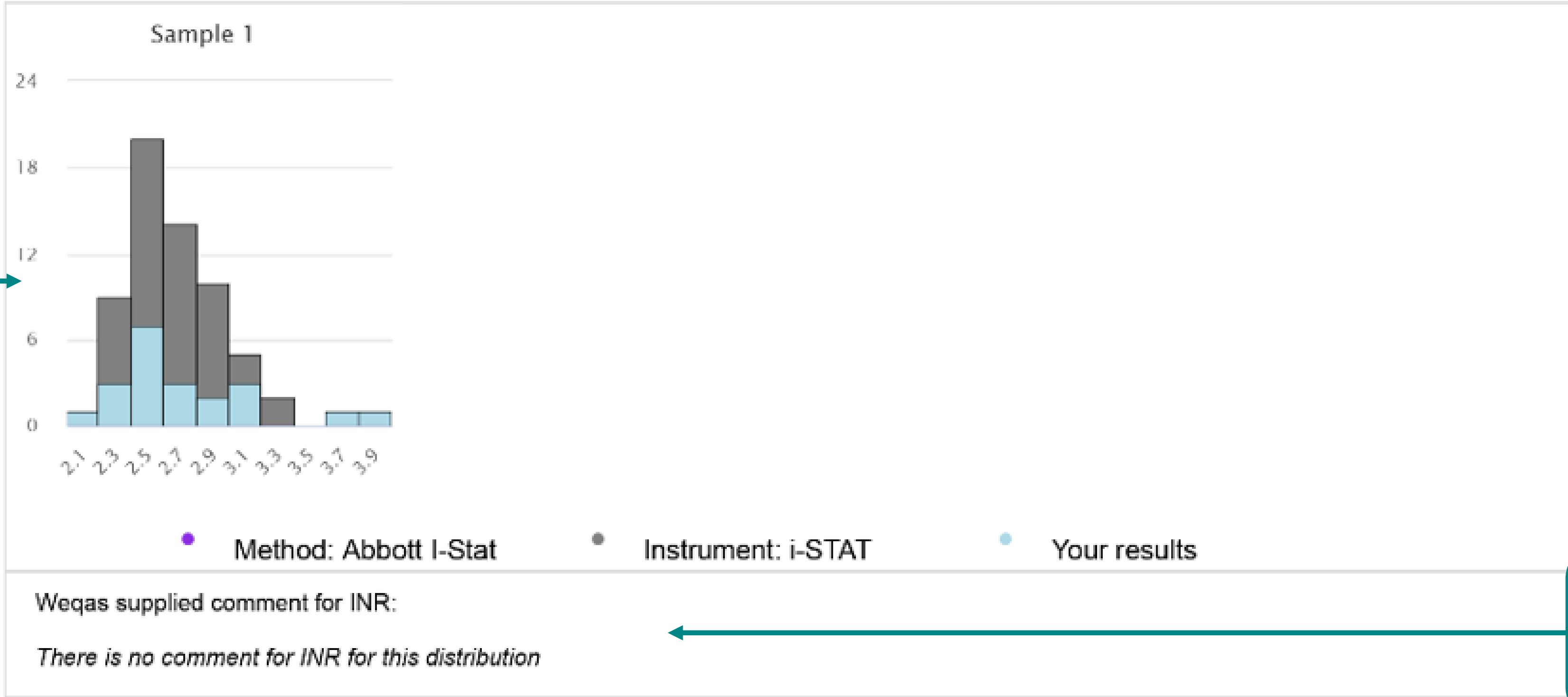


Method		**Nova StatStrip Connectivity**
Target Value Type		**Method Mean**
	Sample 1	
Target Value	8.05	
	My result(s)	**Method**
Mean	7.92	8.05
SD	0.41	0.41
Uncertainty	0.058	0.007
n	50	5107

Histograms showing the spread of your results. Bars are colour coded to show performance categories across the range.

POCT Co-ordinators Report

Histogram showing breakdown of results for each sample, showing the spread of results for your method, your instrument and your submitted results.

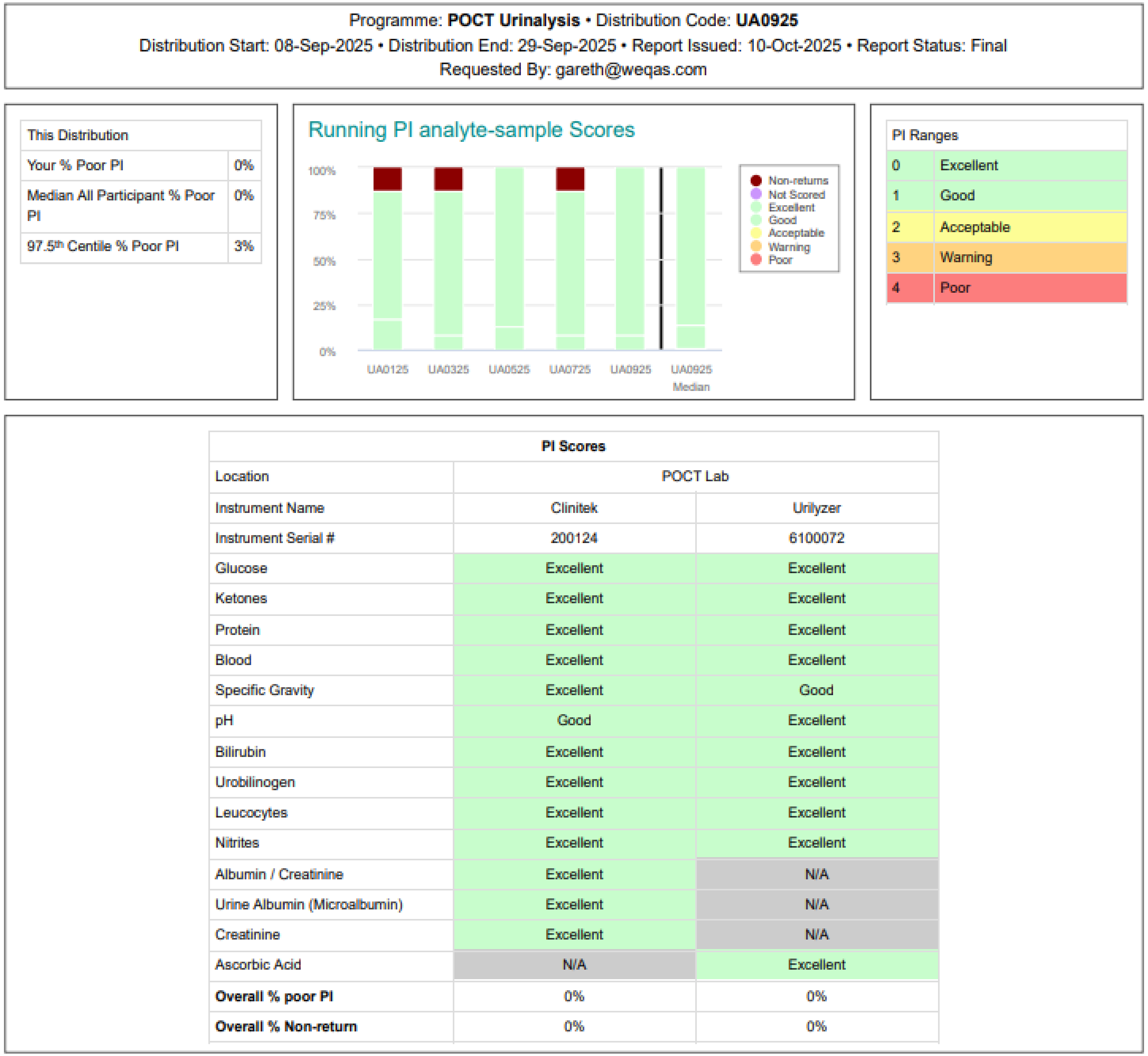


Weqas supplied comment for INR:

There is no comment for INR for this distribution

Distribution Specific Comments from Weqas or participant.

POCT Urinalysis Report – Managers Summary



Programme: **POCT Urinalysis** • Distribution Code: **UA0925**
Distribution Start: 08-Sep-2025 • Distribution End: 29-Sep-2025 • Report Issued: 10-Oct-2025 • Report Status: Final
Requested By: gareth@weqas.com

This Distribution	
Your % Poor PI	0%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	3%

Running PI analyte-sample Scores

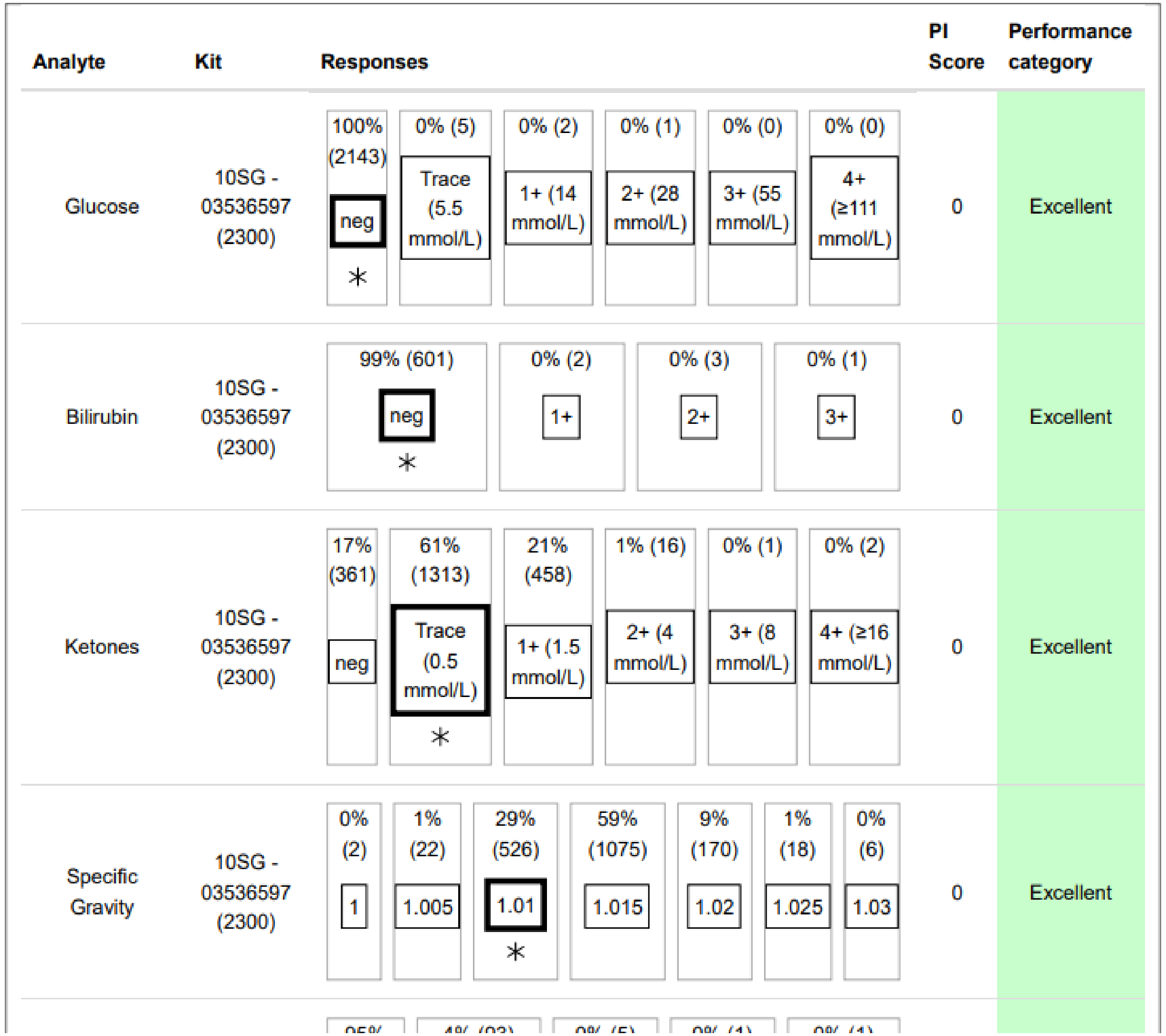
PI Ranges	
0	Excellent
1	Good
2	Acceptable
3	Warning
4	Poor

PI Scores		
Location	POCT Lab	
Instrument Name	Clinitek	Urilyzer
Instrument Serial #	200124	6100072
Glucose	Excellent	Excellent
Ketones	Excellent	Excellent
Protein	Excellent	Excellent
Blood	Excellent	Excellent
Specific Gravity	Excellent	Good
pH	Good	Excellent
Bilirubin	Excellent	Excellent
Urobilinogen	Excellent	Excellent
Leucocytes	Excellent	Excellent
Nitrites	Excellent	Excellent
Albumin / Creatinine	Excellent	N/A
Urine Albumin (Microalbumin)	Excellent	N/A
Creatinine	Excellent	N/A
Ascorbic Acid	N/A	Excellent
Overall % poor PI	0%	0%
Overall % Non-return	0%	0%

POCT Urinalysis – Instrument / Strip Report

∗ indicates your selected response

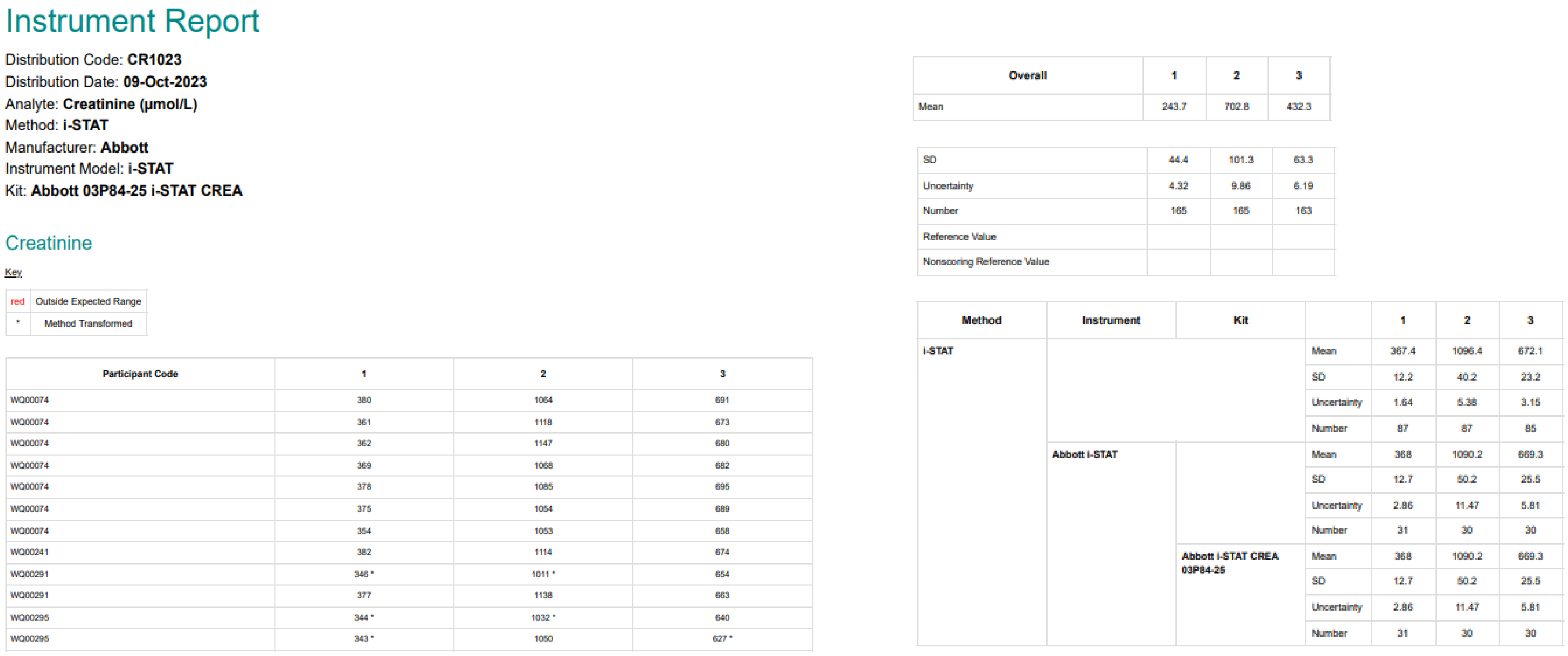
Thick border indicates correct response(s)



Analyte	Kit	Responses							PI Score	Performance category
Glucose	10SG - 03536597 (2300)	100% (2143) **neg** ∗	0% (5) Trace (5.5 mmol/L)	0% (2) 1+ (14 mmol/L)	0% (1) 2+ (28 mmol/L)	0% (0) 3+ (55 mmol/L)	0% (0) 4+ (≥111 mmol/L)		0	Excellent
Bilirubin	10SG - 03536597 (2300)	99% (601) **neg** ∗	0% (2) 1+	0% (3) 2+	0% (1) 3+				0	Excellent
Ketones	10SG - 03536597 (2300)	17% (361) neg	61% (1313) **Trace (0.5 mmol/L)** ∗	21% (458) 1+ (1.5 mmol/L)	1% (16) 2+ (4 mmol/L)	0% (1) 3+ (8 mmol/L)	0% (2) 4+ (≥16 mmol/L)		0	Excellent
Specific Gravity	10SG - 03536597 (2300)	0% (2) 1	1% (22) 1.005	29% (526) **1.01** ∗	59% (1075) 1.015	9% (170) 1.02	1% (18) 1.025	0% (6) 1.03	0	Excellent

Instrument Report –

instrument / kit selection



Instrument Report

Distribution Code: **CR1023**
Distribution Date: **09-Oct-2023**
Analyte: **Creatinine (µmol/L)**
Method: **i-STAT**
Manufacturer: **Abbott**
Instrument Model: **i-STAT**
Kit: **Abbott 03P84-25 i-STAT CREA**

Creatinine

Key

red	Outside Expected Range
*	Method Transformed

Participant Code	1	2	3
WQ00074	380	1064	691
WQ00074	361	1118	673
WQ00074	362	1147	680
WQ00074	369	1068	682
WQ00074	378	1085	695
WQ00074	375	1054	689
WQ00074	354	1053	658
WQ00241	382	1114	674
WQ00291	346 *	1011 *	654
WQ00291	377	1138	663
WQ00295	344 *	1032 *	640
WQ00295	343 *	1050	627 *

Overall	1	2	3
Mean	243.7	702.8	432.3

SD	44.4	101.3	63.3
Uncertainty	4.32	9.86	6.19
Number	165	165	163
Reference Value			
Nonscoring Reference Value			

Method	Instrument	Kit		1	2	3
i-STAT			Mean	367.4	1096.4	672.1
			SD	12.2	40.2	23.2
			Uncertainty	1.64	5.38	3.15
			Number	87	87	85
	Abbott i-STAT		Mean	368	1090.2	669.3
			SD	12.7	50.2	25.5
			Uncertainty	2.86	11.47	5.81
			Number	31	30	30
		Abbott i-STAT CREA 03P84-25	Mean	368	1090.2	669.3
			SD	12.7	50.2	25.5
			Uncertainty	2.86	11.47	5.81
			Number	31	30	30

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EXTERNAL QUALITY ASSESSMENT

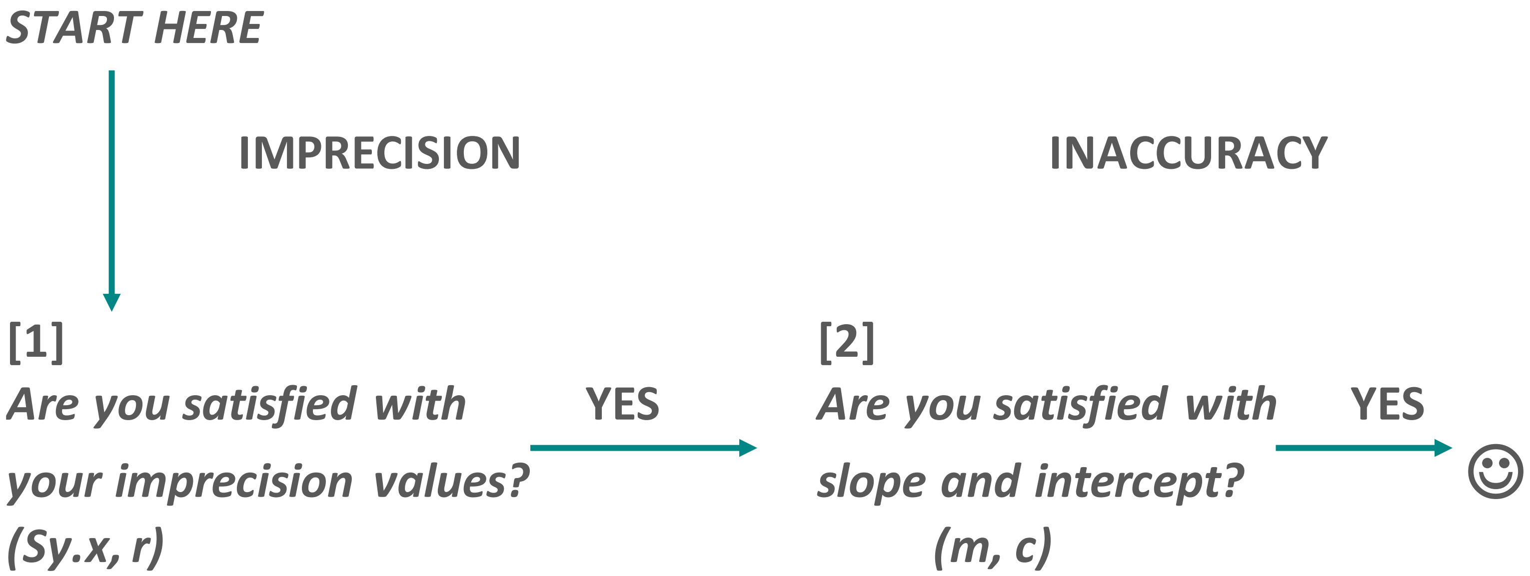
INTERNAL QUALITY CONTROL

REFERENCE MEASUREMENT SERVICES

EDUCATION & TRAINING

Problem Solving and Cases

Problem Solving Flow Chart



START HERE

IMPRECISION

INACCURACY

[1]

Are you satisfied with your imprecision values? (Sy.x, r)

YES

[2]

Are you satisfied with slope and intercept? (m, c)

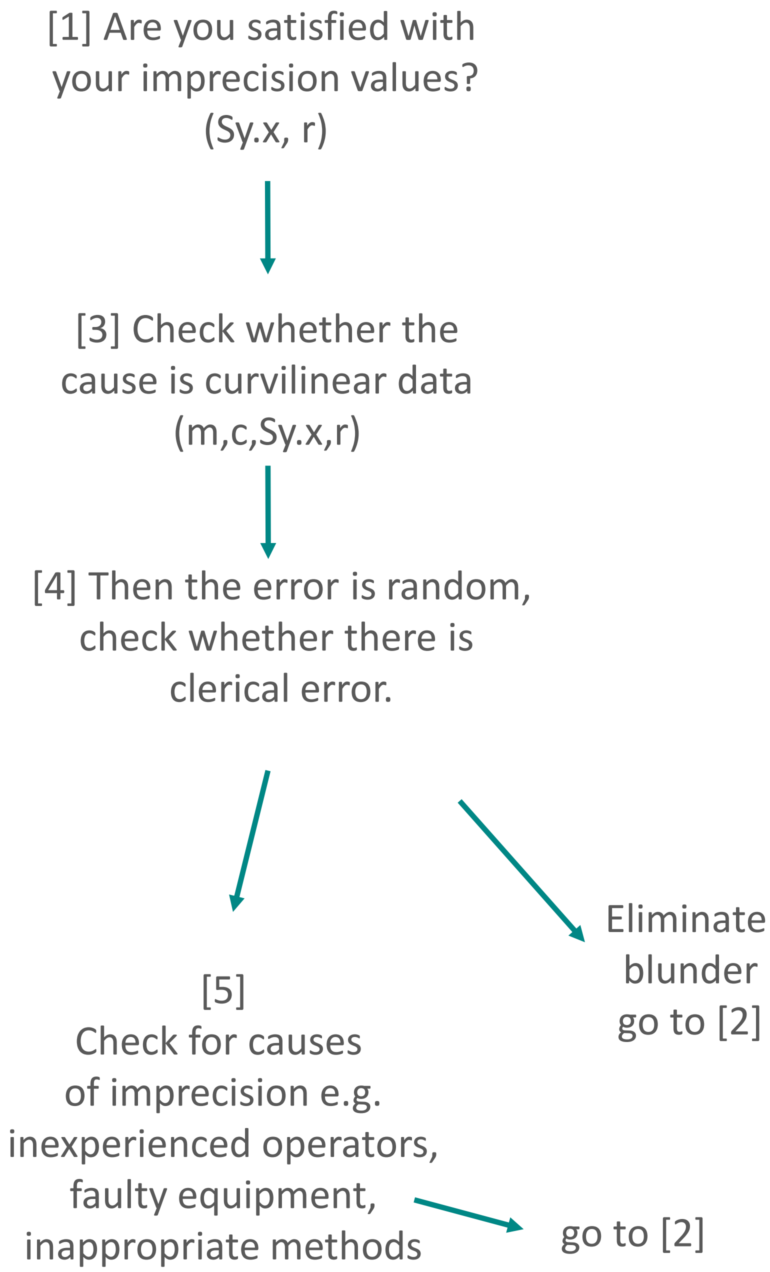
YES

☺

Pages 18-19 of SP-QL1-IntLabEQA

Problem Solving Flow Chart

IMPRECISION



[1] Are you satisfied with your imprecision values? (Sy.x, r)

[3] Check whether the cause is curvilinear data (m,c,Sy.x,r)

[4] Then the error is random, check whether there is clerical error.

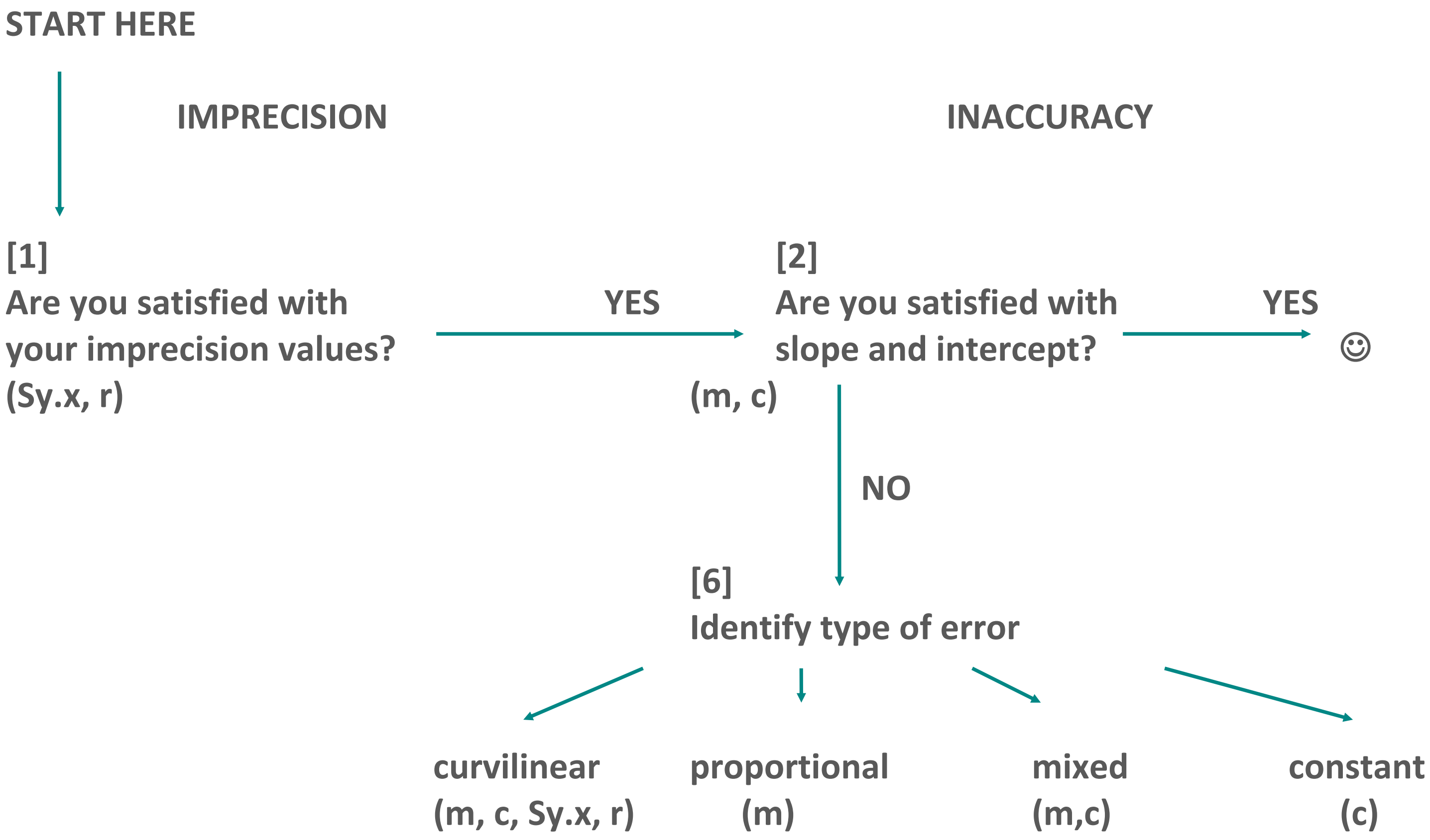
[5]
Check for causes of imprecision e.g. inexperienced operators, faulty equipment, inappropriate methods

go to [2]

Eliminate blunder
go to [2]

Pages 18-19 of SP-QL1-IntLabEQA

Problem Solving Flow Chart



START HERE

IMPRECISION

INACCURACY

[1]
Are you satisfied with your imprecision values?
(Sy.x, r)

YES

[2]
Are you satisfied with slope and intercept?
(m, c)

YES

☺

NO

[6]
Identify type of error

curvilinear
(m, c, Sy.x, r)

proportional
(m)

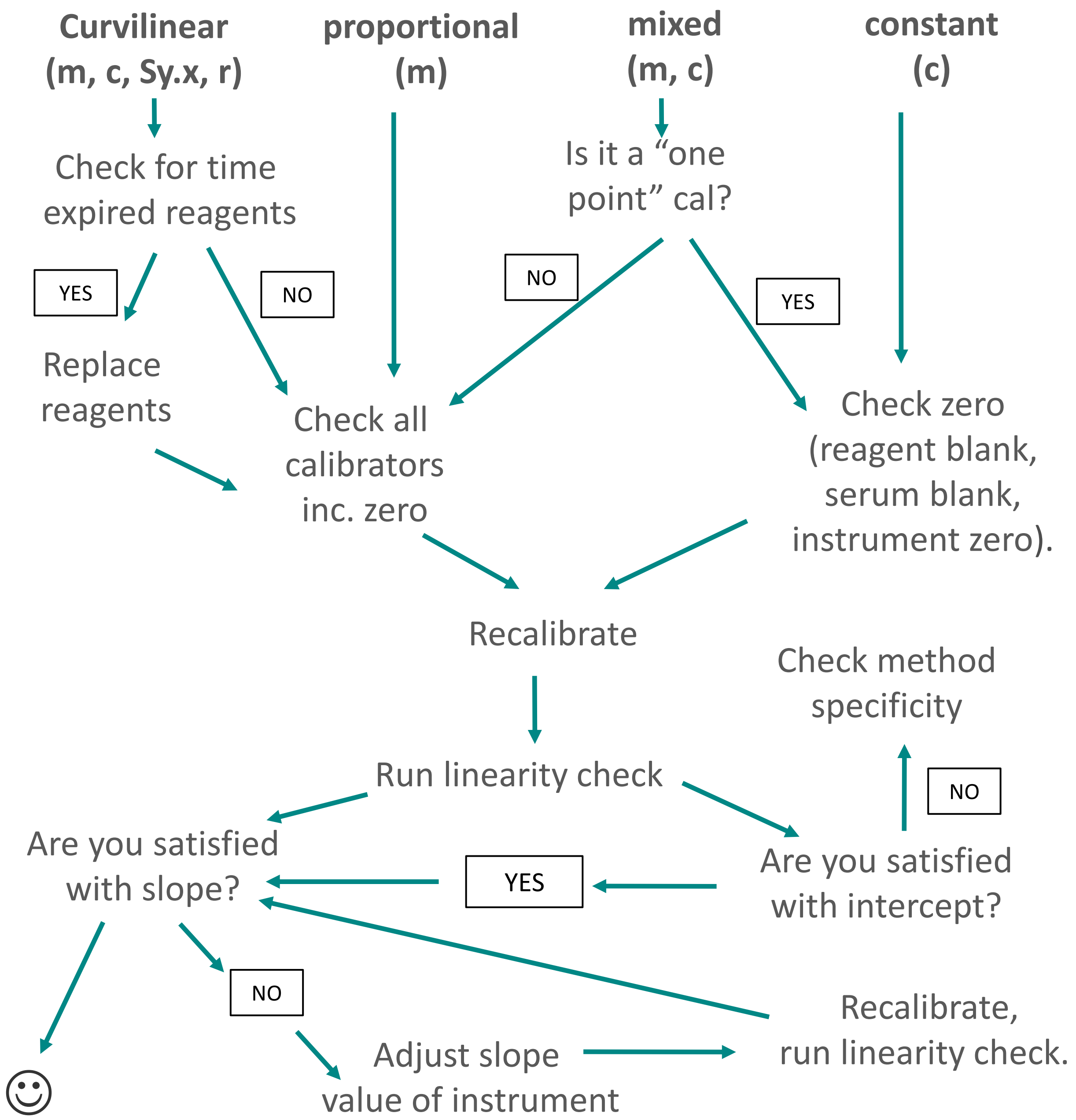
mixed
(m,c)

constant
(c)

Pages 18-19 of SP-QL1-IntLabEQA

Problem Solving Flow Chart

INACCURACY



Curvilinear (m, c, Sy.x, r)

proportional (m)

mixed (m, c)

constant (c)

Check for time expired reagents

YES

NO

Replace reagents

Is it a "one point" cal?

NO

YES

Check all calibrators inc. zero

Check zero (reagent blank, serum blank, instrument zero).

Recalibrate

Run linearity check

Check method specificity

NO

Are you satisfied with intercept?

YES

Are you satisfied with slope?

☺

NO

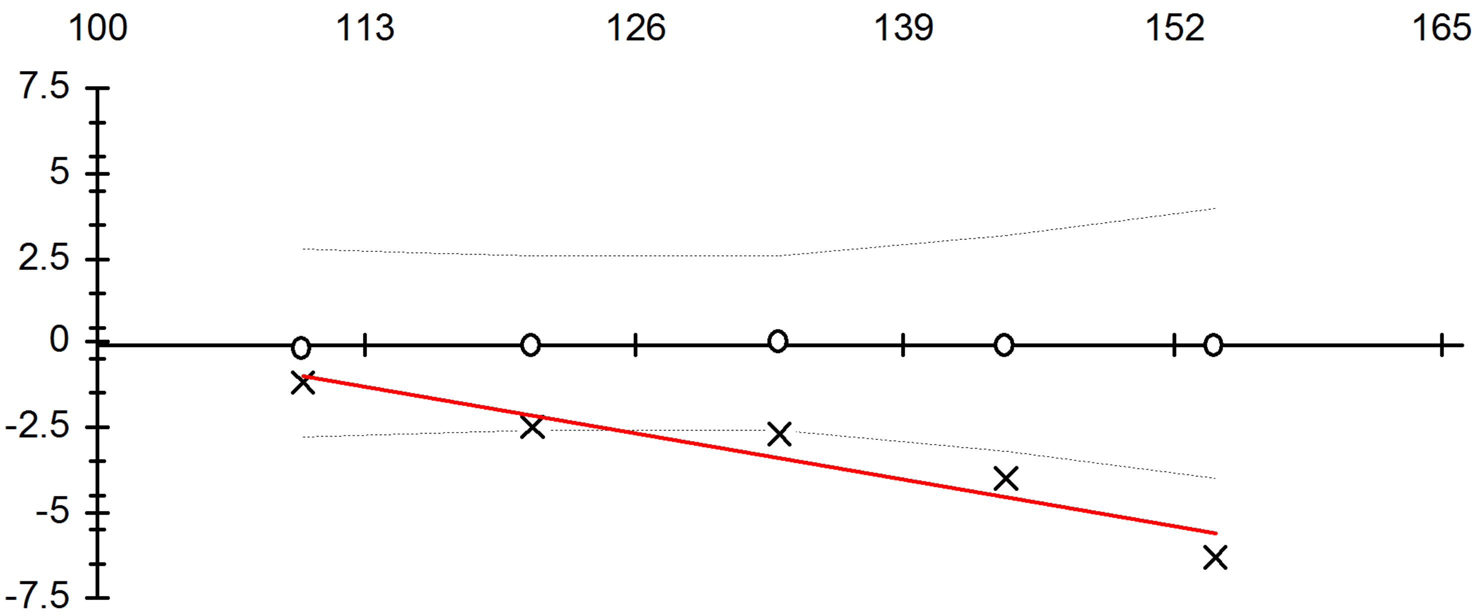
Adjust slope value of instrument

Recalibrate, run linearity check.

Pages 18-19 of SP-QL1-IntLabEQA

Bias plot (1)

Sodium (mmol/l)



y = 0.9x + 9.6

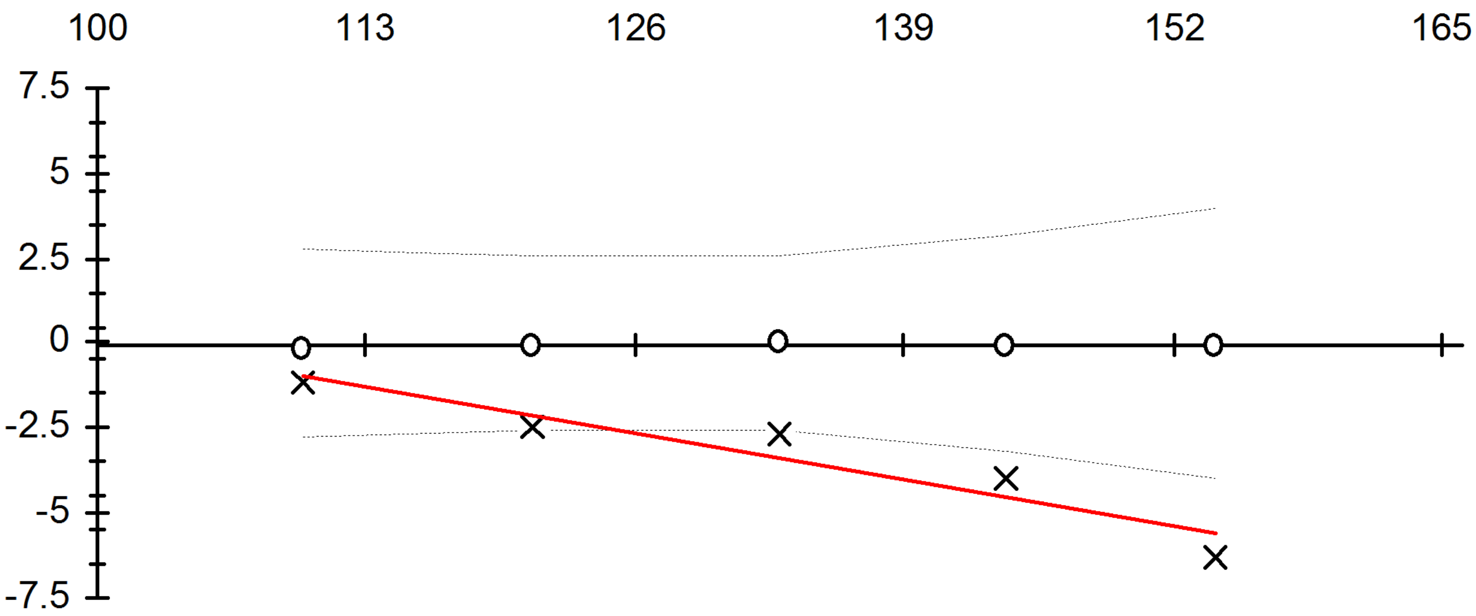
r = 0.9995

IS = 5

Sy.x = 0.63

Bias plot (1)

Sodium (mmol/l)

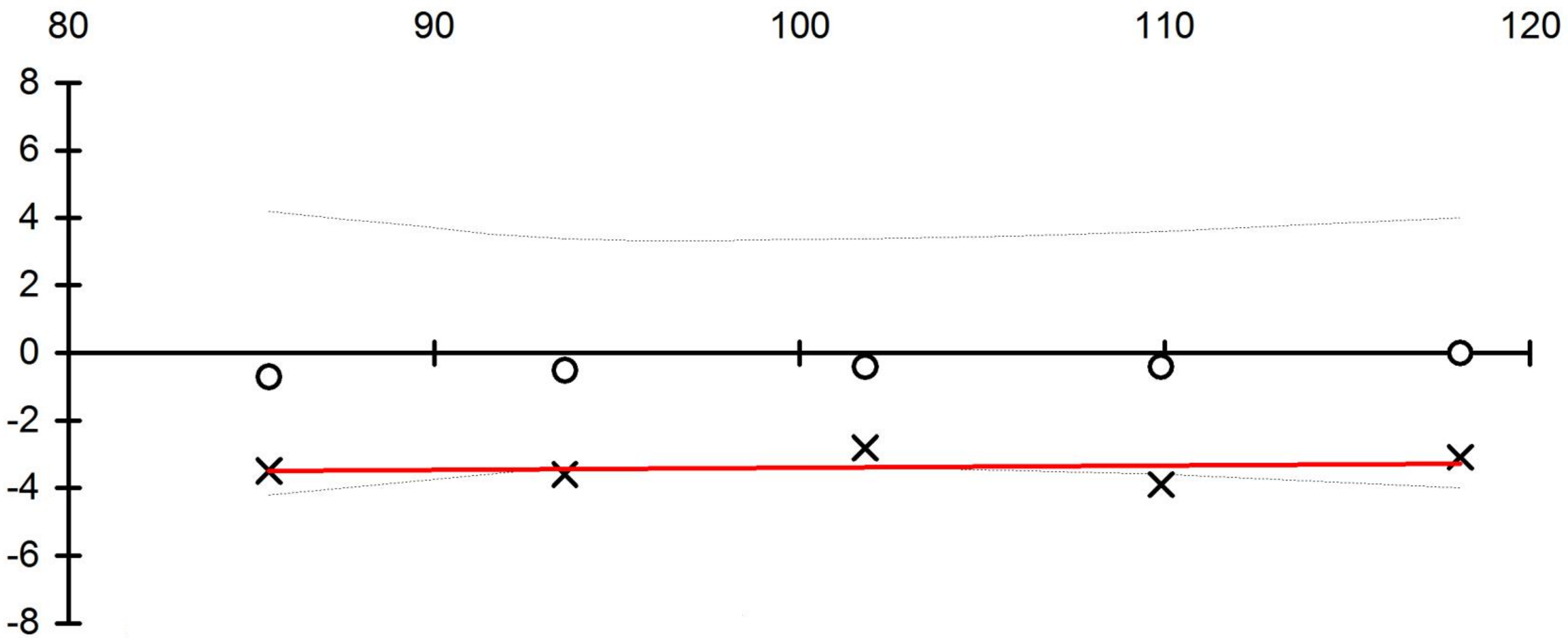


y = 0.9x + 9.6
r = 0.9995
IS = 5
Sy.x = 0.63

Imprecision – satisfactory
Inaccuracy – identify error
m= 0.9, c = +9.6 mmol/L – OK at 100 mmol/L
2.5% negative bias at 130 mmol/L, 4% negative bias at 160 mmol/L
Error – mixed. Two points calibration at 110 and 160 mmol/L
Cause – incorrect values for 160 mmol/L calibration

Bias plot (2)

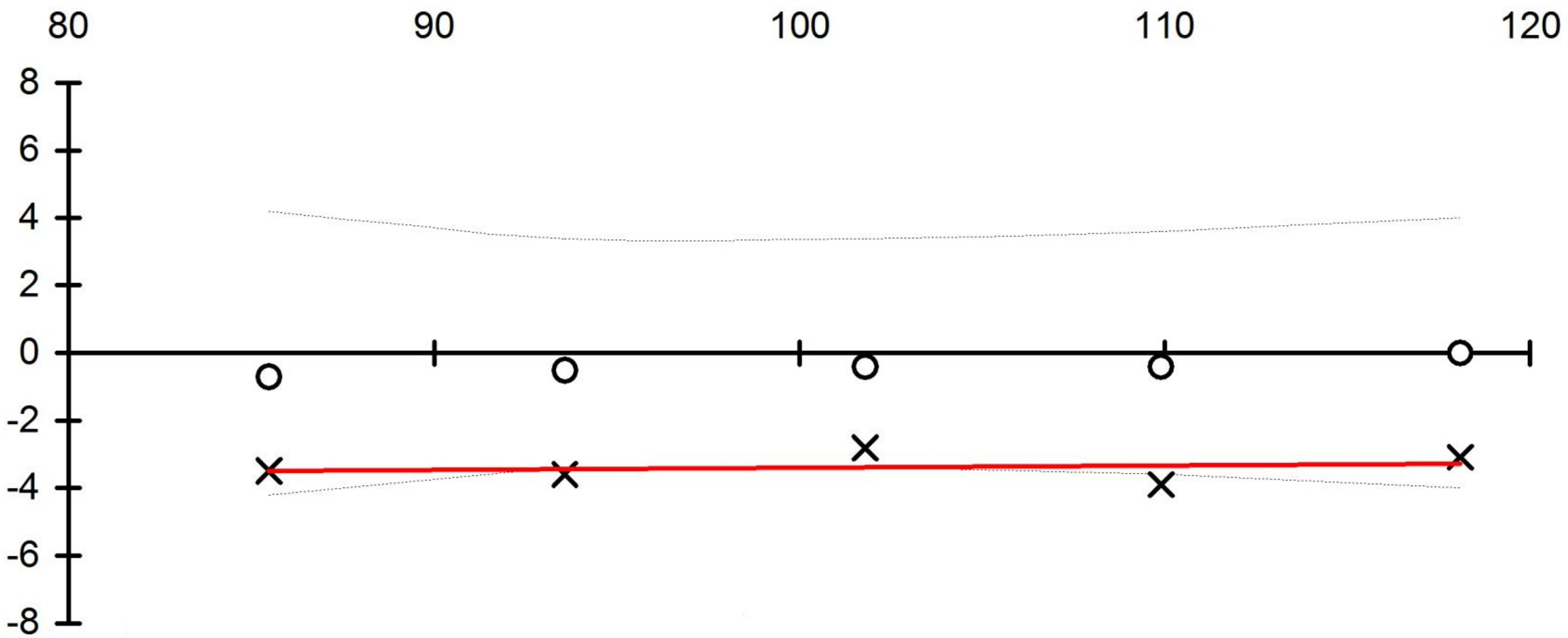
Chloride (mmol/l)



y = 1.01x -4.01
r = 0.9995
IS = 5
Sy.x = 0.49

Bias plot (2)

Chloride (mmol/l)

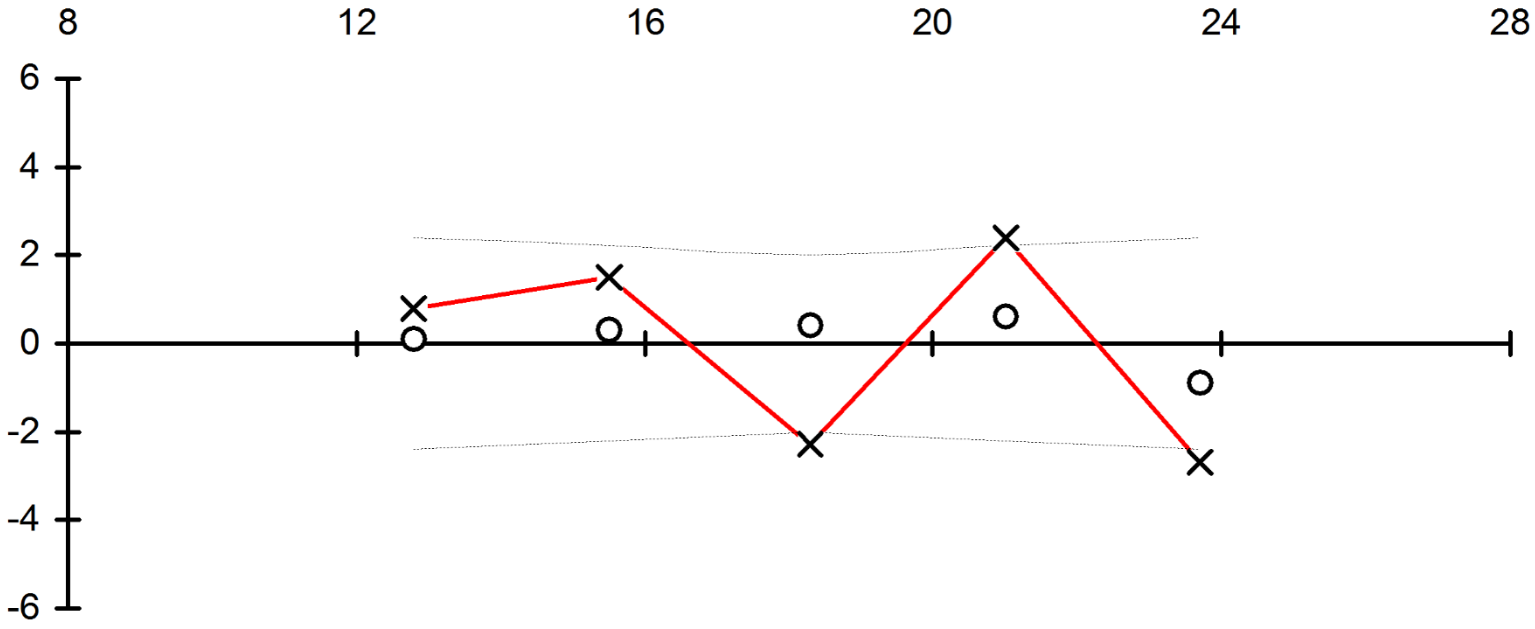


y = 1.01x -4.01
r = 0.9995
IS = 5
Sy.x = 0.49

Imprecision – satisfactory
Inaccuracy – identify error
c = -4.0 mmol/L
Error – systematic absolute. Results low by 4.0 mmol/L over whole range
Cause – incorrect serum blank compensation

Bias plot (3)

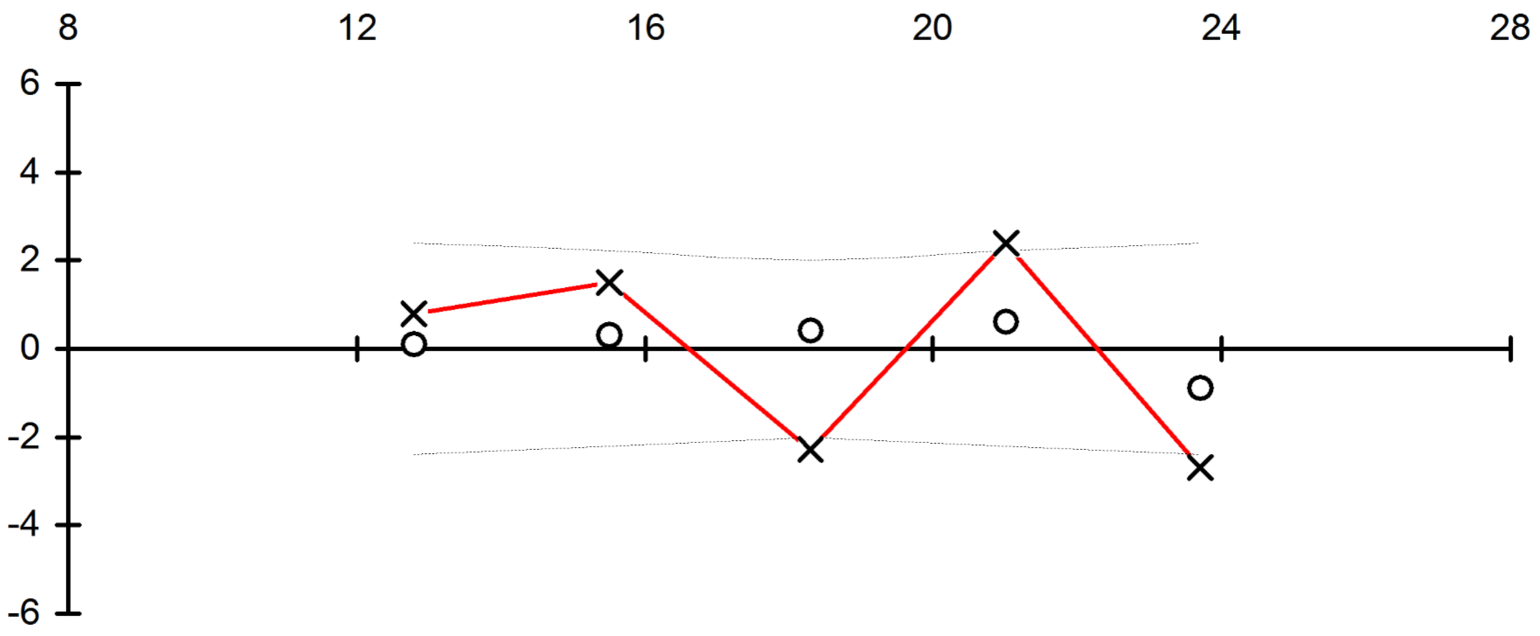
Bicarbonate (mmol/l)



y = slope not calculated
r = 0.8484
IS = 1516
Sy.x = 2.41

Bias plot (3)

Bicarbonate (mmol/l)

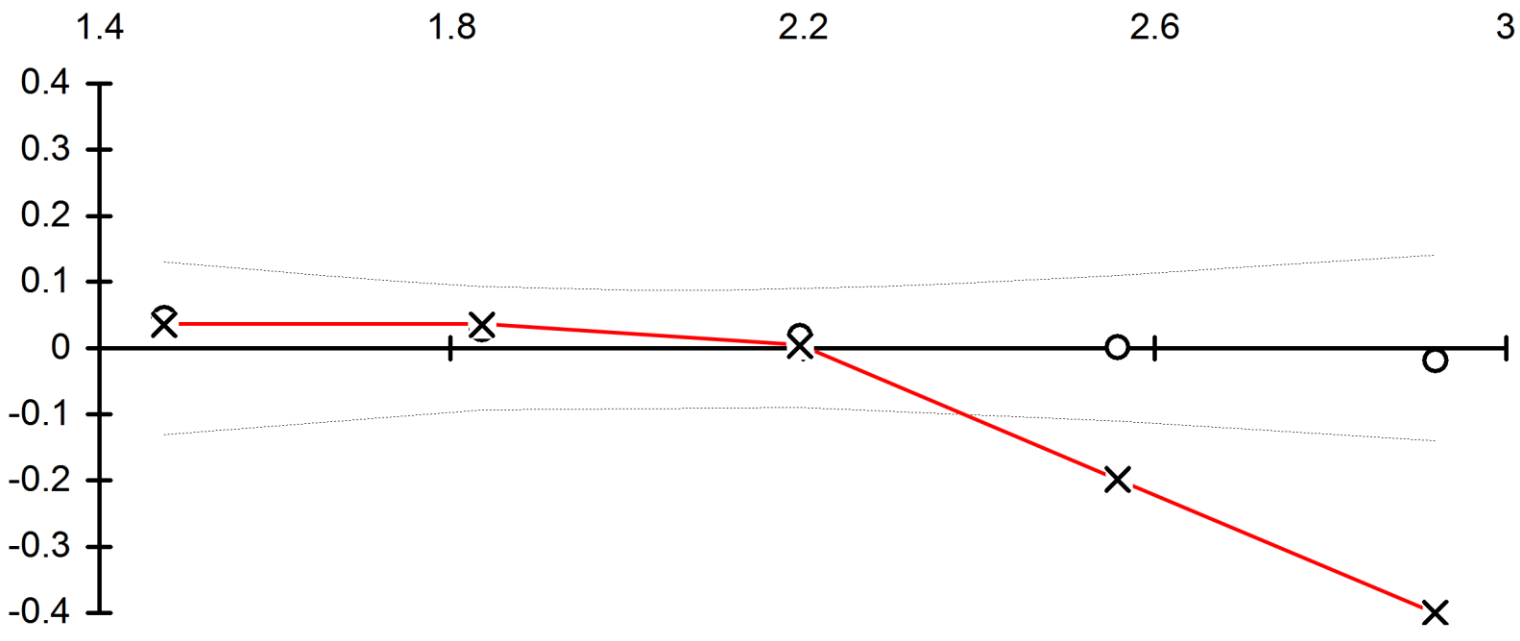


y = slope not calculated
r = 0.8484
IS = 1516
Sy.x = 2.41

Imprecision – unsatisfactory, r = 0.8484, Sy.x = 2.4 mmol/L
Not curvilinear
Error – random
Cause – faulty syringe on instrument

Bias plot (4)

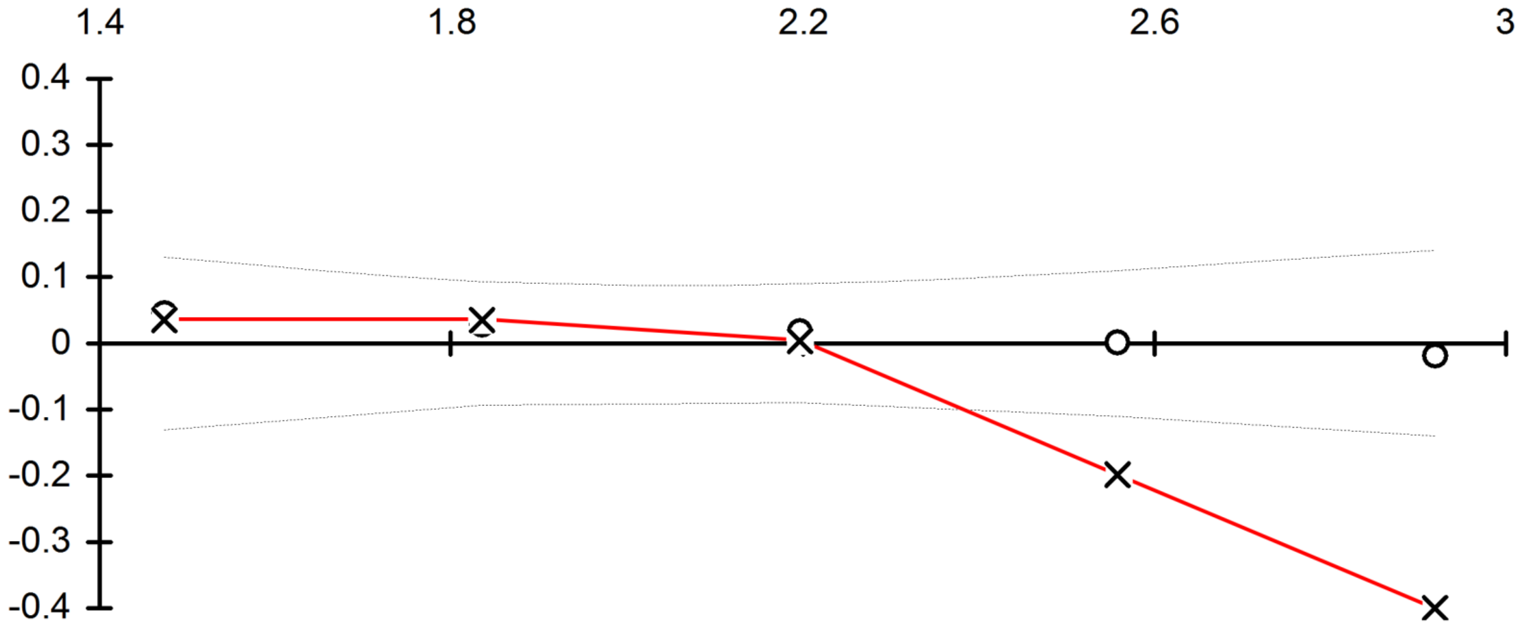
Calcium (mmol/l)



y = slope not calculated
r = 0.9810
IS = 190
Sy.x = 0.09

Bias plot (4)

Calcium (mmol/l)

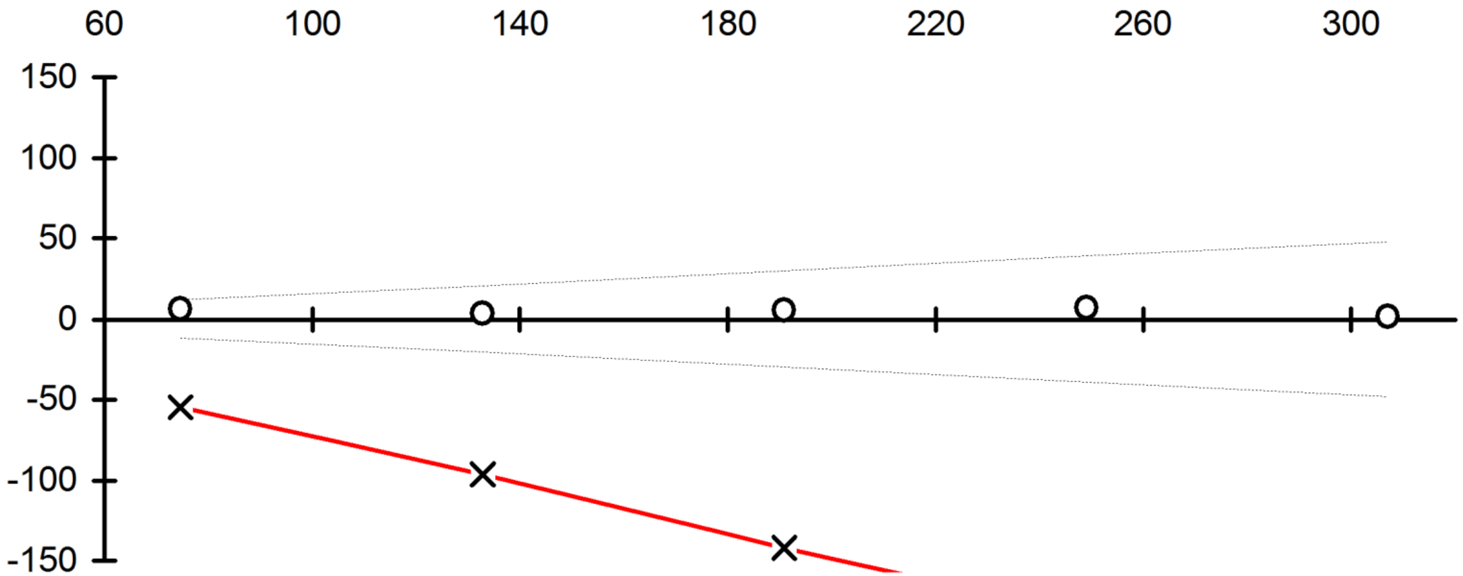


y = slope not calculated
r = 0.9810
IS = 190
Sy.x = 0.09

Imprecision – unsatisfactory, r = 0.9810, Sy.x = 0.09 mmol/L
Error – curvilinear data
Cause – time expired reagents

Bias plot (5)

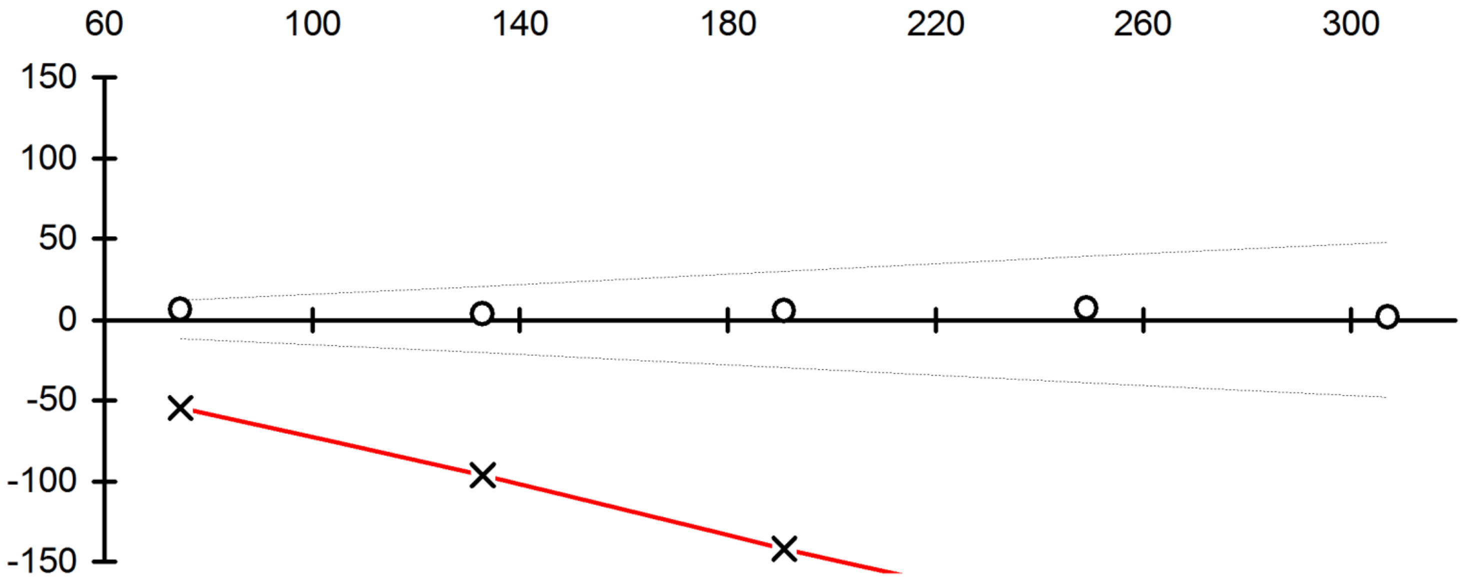
ALP (IU/L)



y = 0.50x +1.16
r = 0.9999
IS = 1
Sy.x = 1.30

Bias plot (5)

ALP (IU/L)



y = 0.50x +1.16
r = 0.9999
IS = 1
Sy.x = 1.30

Imprecision – satisfactory
Inaccuracy – identify error
m = 0.57
Error – systematic proportional error. Results low by 41% over the whole range
Cause – incorrect method group classification. The lab was using AMP not DEA buffer

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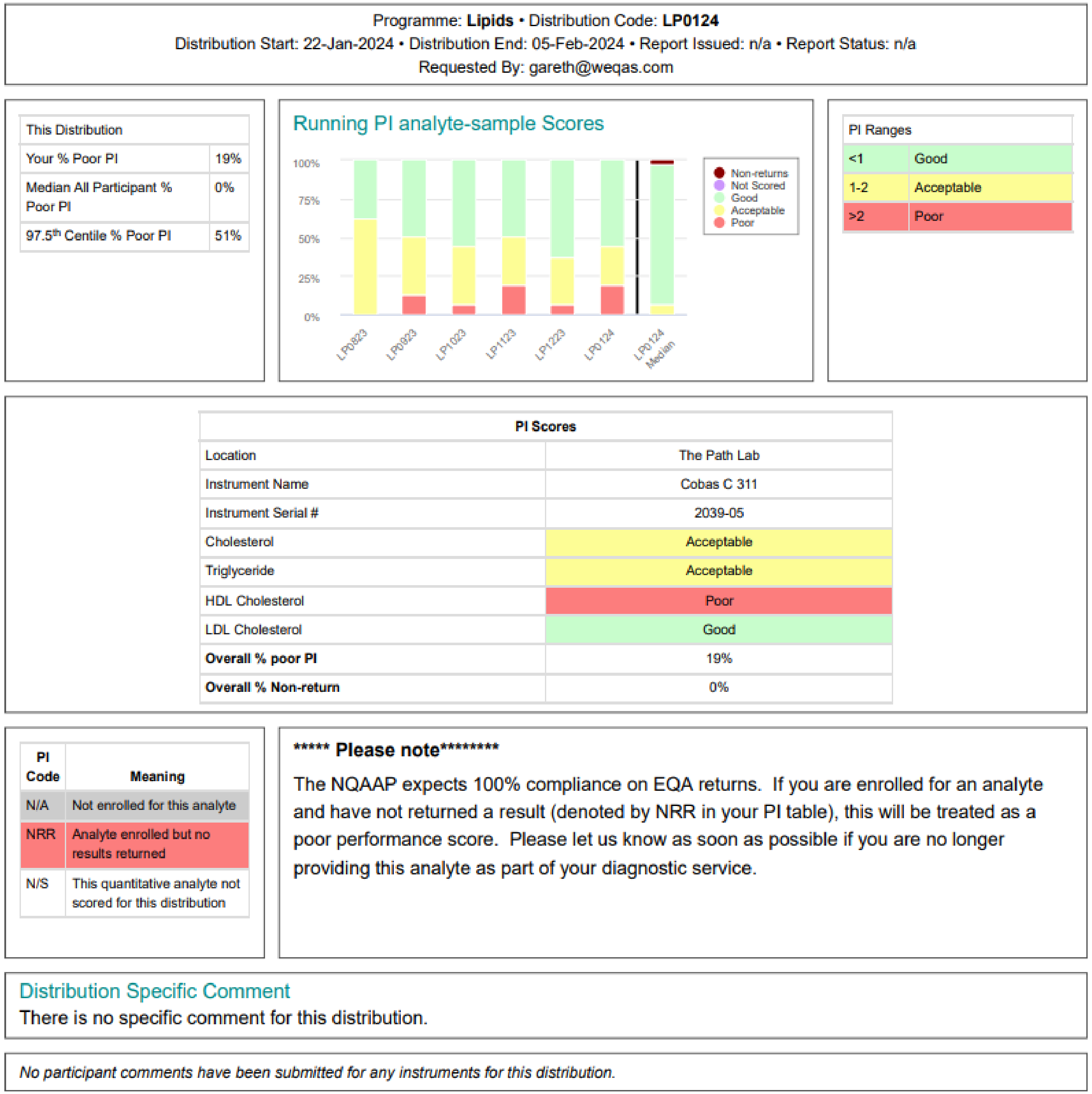
Case Study - example



Programme: **Lipids** • Distribution Code: **LP0124**
Distribution Start: 22-Jan-2024 • Distribution End: 05-Feb-2024 • Report Issued: n/a • Report Status: n/a
Requested By: gareth@weqas.com

This Distribution	
Your % Poor PI	19%
Median All Participant % Poor PI	0%
97.5th Centile % Poor PI	51%

Running PI analyte-sample Scores

PI Ranges	
<1	Good
1-2	Acceptable
>2	Poor

PI Scores	
Location	The Path Lab
Instrument Name	Cobas C 311
Instrument Serial #	2039-05
Cholesterol	Acceptable
Triglyceride	Acceptable
HDL Cholesterol	Poor
LDL Cholesterol	Good
Overall % poor PI	19%
Overall % Non-return	0%

PI Code	Meaning
N/A	Not enrolled for this analyte
NRR	Analyte enrolled but no results returned
N/S	This quantitative analyte not scored for this distribution

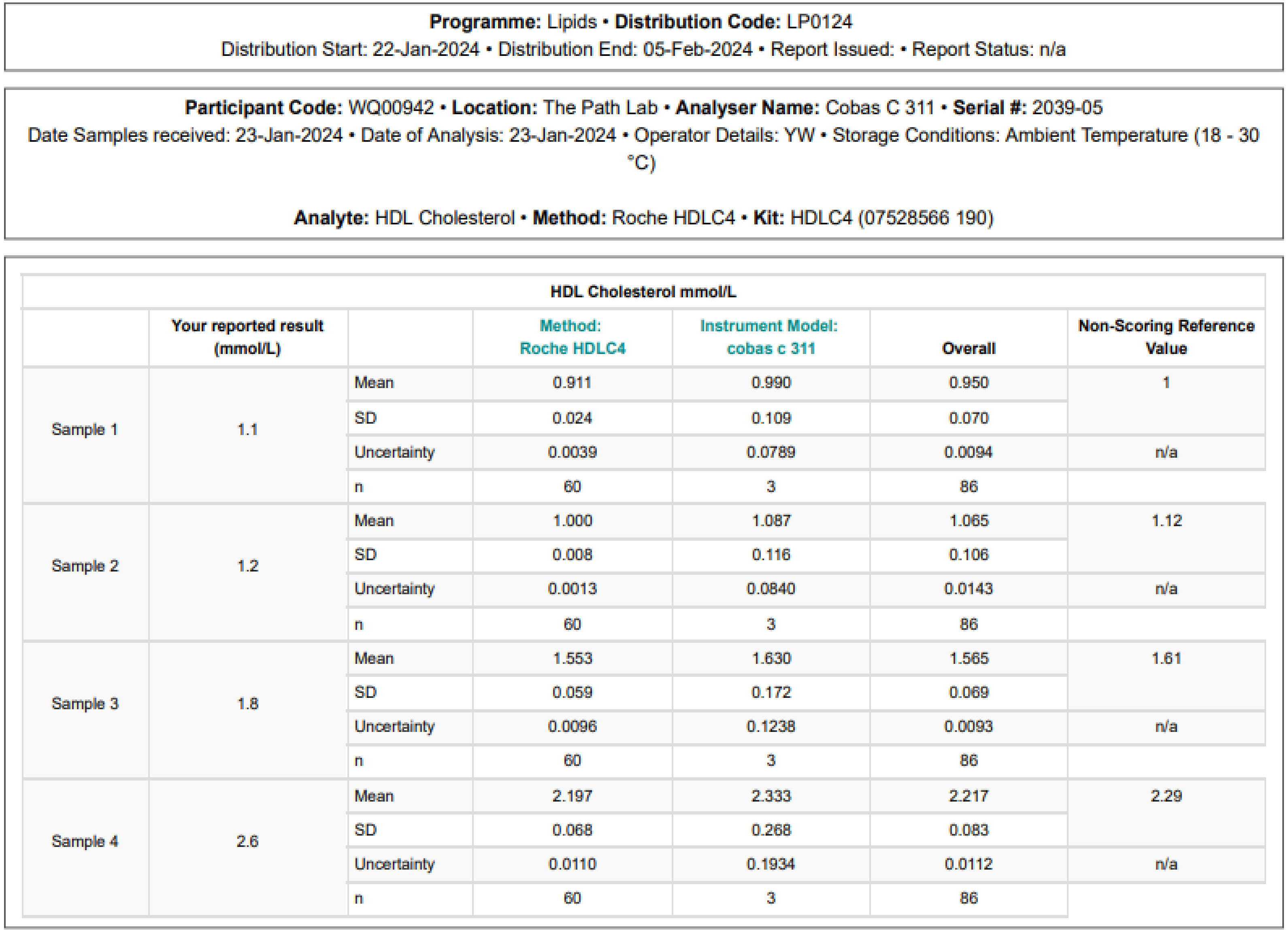
******* Please note**********

The NQAAP expects 100% compliance on EQA returns. If you are enrolled for an analyte and have not returned a result (denoted by NRR in your PI table), this will be treated as a poor performance score. Please let us know as soon as possible if you are no longer providing this analyte as part of your diagnostic service.

Distribution Specific Comment

There is no specific comment for this distribution.

No participant comments have been submitted for any instruments for this distribution.



Programme: Lipids • **Distribution Code:** LP0124
Distribution Start: 22-Jan-2024 • Distribution End: 05-Feb-2024 • Report Issued: • Report Status: n/a

Participant Code: WQ00942 • **Location:** The Path Lab • **Analyser Name:** Cobas C 311 • **Serial #:** 2039-05
Date Samples received: 23-Jan-2024 • Date of Analysis: 23-Jan-2024 • Operator Details: YW • Storage Conditions: Ambient Temperature (18 - 30 °C)

Analyte: HDL Cholesterol • **Method:** Roche HDLC4 • **Kit:** HDLC4 (07528566 190)

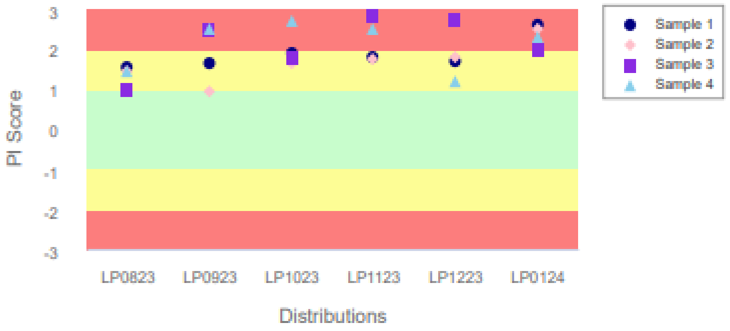
HDL Cholesterol mmol/L

	Your reported result (mmol/L)		Method: Roche HDLC4	Instrument Model: cobas c 311	Overall	Non-Scoring Reference Value
Sample 1	1.1	Mean	0.911	0.990	0.950	1
		SD	0.024	0.109	0.070	
		Uncertainty	0.0039	0.0789	0.0094	n/a
		n	60	3	86	
Sample 2	1.2	Mean	1.000	1.087	1.065	1.12
		SD	0.008	0.116	0.106	
		Uncertainty	0.0013	0.0840	0.0143	n/a
		n	60	3	86	
Sample 3	1.8	Mean	1.553	1.630	1.565	1.61
		SD	0.059	0.172	0.069	
		Uncertainty	0.0096	0.1238	0.0093	n/a
		n	60	3	86	
Sample 4	2.6	Mean	2.197	2.333	2.217	2.29
		SD	0.068	0.268	0.083	
		Uncertainty	0.0110	0.1934	0.0112	n/a
		n	60	3	86	

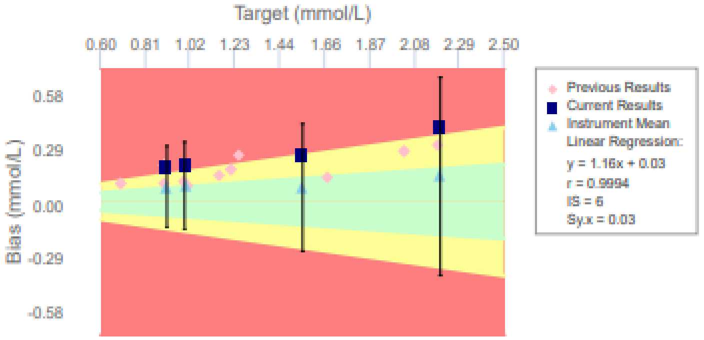
Scoring

Sample	1	2	3	4	Overall Performance
Target: (Method Mean)	0.911	1	1.553	2.197	
Weqas TAE	0.146	0.16	0.248	0.352	
PI	2.6	2.5	1.99	2.29	Poor

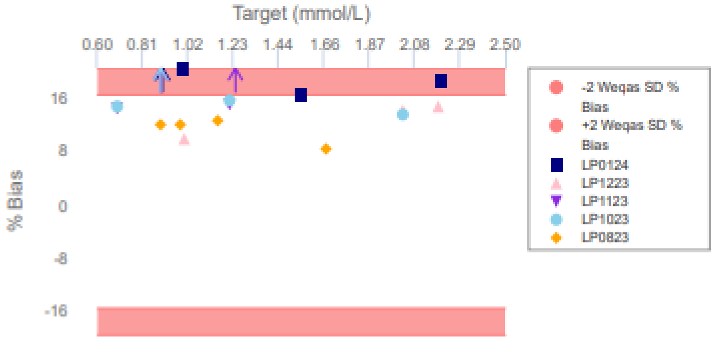
Running PI



Bias (Absolute)



Bias (Relative %)

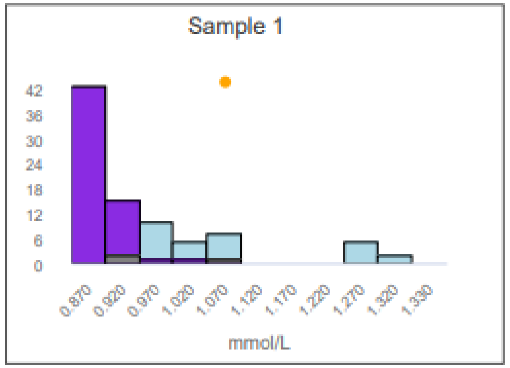


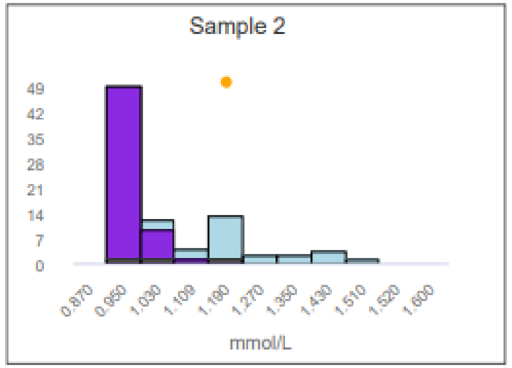
Precision

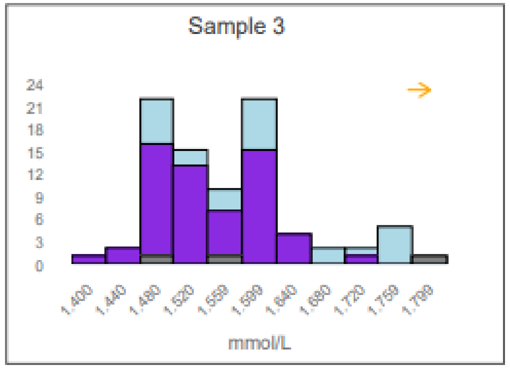
	LP0823	LP0923	LP1023	LP1123	LP1223	This distribution: LP0124
Sy.x	0.02	0.05	0.04	0.05	0.06	0.03
IS	7	11	12	80	20	6

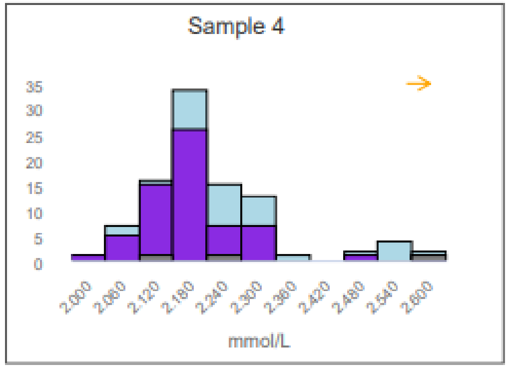
Sy.x is the average deviation from the best fit line and is an index of scatter.

IS Score	Interpretation
0 to 10	Good
11 to 150	Acceptable to Warning level
> 150	Unacceptable (incl. Curvilinear Data)









■ All Results ■ My Method ■ My Instrument ● My Result

Method Summary

LP0124	Sample 1		Sample 2		Sample 3		Sample 4	
Method Name	**Mean**	**CV%**	**Mean**	**CV%**	**Mean**	**CV%**	**Mean**	**CV%**
Elimination (n=8)	1.225	13.0	1.381	10.9	1.754	1.5	2.475	7.8
Enzymatic Immunoinhibition (n=14)	1.046	4.8	1.193	4.3	1.564	3.7	2.217	3.4
NMR Spectroscopy (n=1)	1.280	0.0	1.290	0.0	1.590	0.0	2.280	0.0
Roche HDLC4 (n=60)	**0.911**	**2.6**	**1.000**	**0.8**	**1.553**	**3.8**	**2.197**	**3.1**
Vitros (n=3)	1.033	6.3	1.200	0.0	1.633	4.0	2.333	2.8

There are no Weqas or Participant supplied comments for HDL Cholesterol for this distribution.

Summary Report

Analyte: HDL

Overall Performance Category: Poor

Running PI analyte –sample scores: >50% good, some acceptable some poor. More poor and less good than median

Standard Report

Analyte results table: your results higher than method mean, higher than instrument mean but n only 3. Non scoring ref value

Scoring Table: 3 samples poor PI, 1 sample acceptable but PI 1.99.

Running PI scores: LP0823 acceptable, since them got worse, mostly poor for LP0124

Bias Chart (Absolute): longstanding positive bias, this dist worse than previous, instrument mean close to method mean, y = 1.16*x + 0.03, 16% positive proportional bias. Instrument SDs wide but n = 3

Bias Chart (Relative): longstanding positive bias

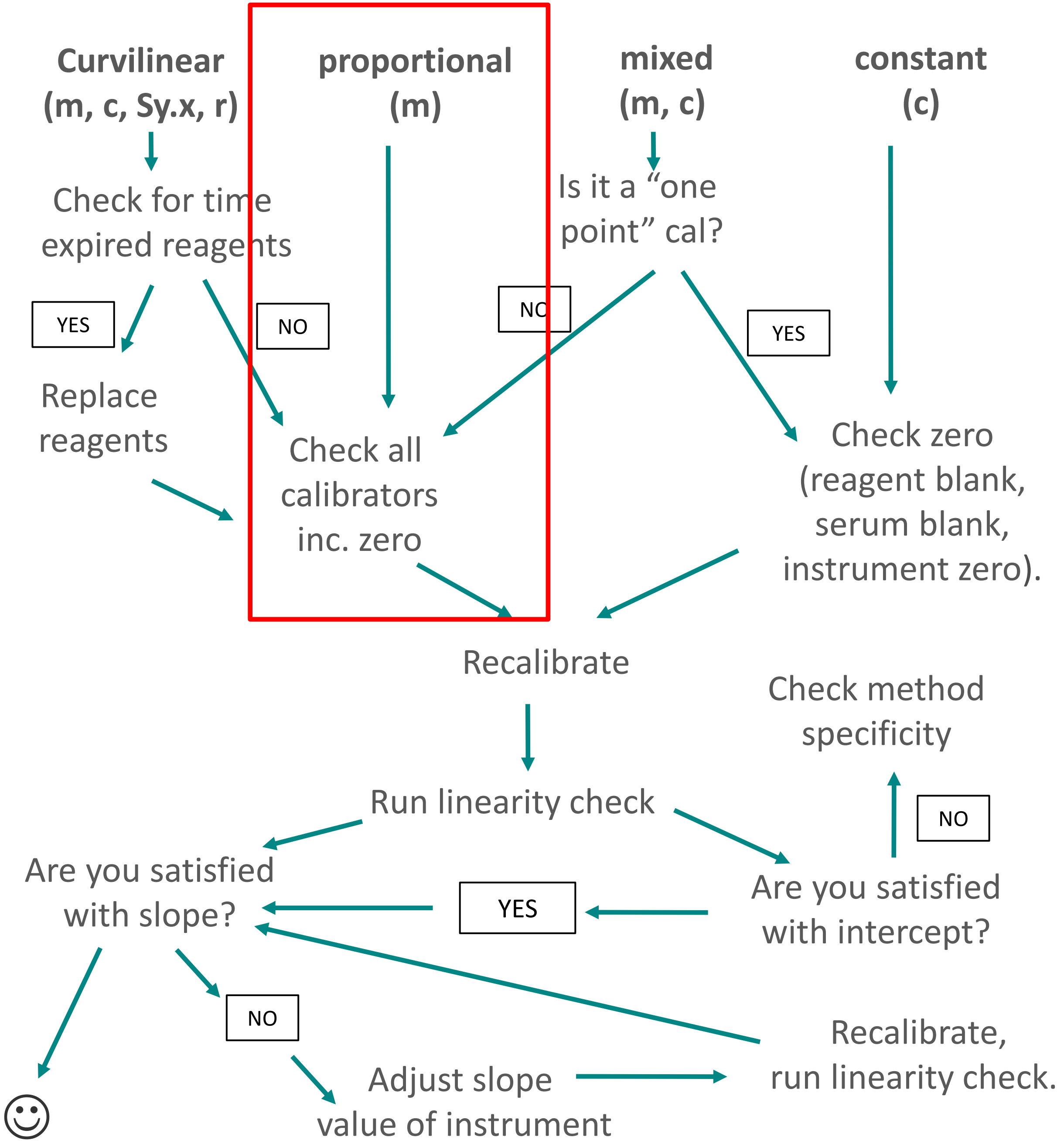
Precision Scores: precision good, previously good or acceptable

Sample Histograms: samples 3 and 4 off the scale, samples 1 and 2 non gaussian distributions but your result to the right of majority

Method Summary Data: Roche method negative bias to other methods

Problem Solving Flow Chart

INACCURACY



Curvilinear (m, c, Sy.x, r)

Check for time expired reagents

YES

Replace reagents

NO

proportional (m)

Check all calibrators inc. zero

mixed (m, c)

Is it a “one point” cal?

NO

YES

constant (c)

Check zero (reagent blank, serum blank, instrument zero).

Recalibrate

Run linearity check

Are you satisfied with intercept?

NO

Check method specificity

YES

Are you satisfied with slope?

☺

NO

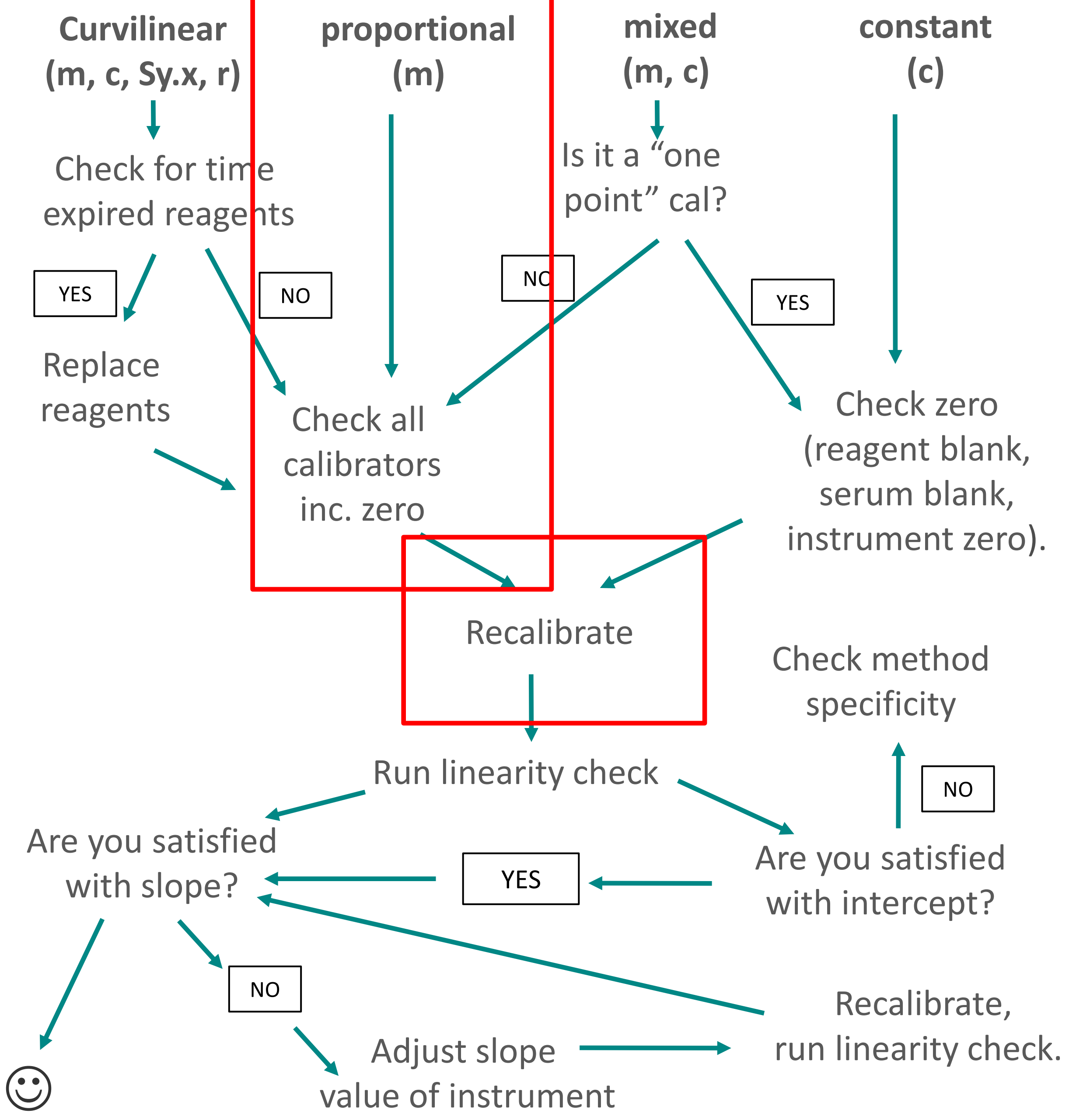
Adjust slope value of instrument

Recalibrate, run linearity check.

Pages 18-19 of SP-QL1-IntLabEQA

Problem Solving Flow Chart

INACCURACY



Curvilinear (m, c, Sy.x, r)

proportional (m)

mixed (m, c)

constant (c)

Check for time expired reagents

YES

NO

Replace reagents

Is it a “one point” cal?

NO

YES

Check all calibrators inc. zero

Check zero (reagent blank, serum blank, instrument zero).

Recalibrate

Check method specificity

Run linearity check

NO

Are you satisfied with slope?

YES

Are you satisfied with intercept?

NO

Adjust slope value of instrument

Recalibrate, run linearity check.

☺

Pages 18-19 of SP-QL1-IntLabEQA

Cases study Session

- 40 minutes workshop: each table has 3 cases to review
  - ✓ Comment on results and any points to note from the report
  - ✓ Identify the error
  - ✓ Discuss potential cause and resolution

- 20 minutes participant commentary and discussion