



TECHNOPATH

CLINICAL DIAGNOSTICS

THE QUALITY CONTROL COMPANY



REAL-TIME

AUDIT
COMPLIANT

INTERLABORATORY
COMPARISON

IAMQC
PEER

Real-Time Peer
Comparison Software

Contents

| | |
|---------------------------------|----|
| Introduction | 4 |
| IAMQC® Peer | 5 |
| Reagent Lot Report | 7 |
| Group Coordinator Report..... | 7 |
| Levey-Jennings Report..... | 8 |
| Exceptions Report..... | 8 |
| Monthly Summary Report | 9 |
| Youden Plot | 9 |
| Six Sigma Report..... | 10 |
| Measurement of Uncertainty..... | 11 |
| Bias Report..... | 11 |

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Interlaboratory **Peer** Program

The easiest way to automate Technopath's Multichem[®] QC data.

What is **IAMQC Peer**?

IAMQC Peer enables **real-time peer comparison** between laboratories across the globe for all QC test data. This allows the laboratory to easily monitor its own reliability and precision.

-  Interlaboratory **Peer** Group
-  Powerful **Inter-Laboratory** QC Comparison Reports
-  Full System **Automation** Supported

Setting up **laboratory instruments with**
IAMQC[®] **Peer** is as simple as steps...

1

REGISTER

Fill your laboratory details in to the online Activation Form here.
<https://register.iamqc.com>



2

ACTIVATE

Account is activated after verification



3

LOG ON

On activation, you will receive your login details and a user guide

**START
HERE**

Introduction



What is an interlaboratory program?

In its simplest form, an interlaboratory program is a means for individual labs to compare their performance against other labs. The comparison will be against other labs using the same lot of quality control (QC) material on the same test and on the same instrument type. Interlaboratory programs offer various reports to show how your instruments in your lab compare against all others,

with these reports being generated at the end of the month once all data has been submitted. Some interlaboratory programs offer real-time peer comparison where the values displayed are based on all of the data that has been submitted up to the time of report generation or statistic viewing.

Why should you use an interlaboratory program?

Any laboratory that strives to achieve ISO accreditation should be part of an interlaboratory program:

"The laboratory shall participate in interlaboratory comparison programme(s) ..." - ISO 15189:2012(E), Subclause 5.6.3.1.

This ISO standard specifies the quality management system requirements particular to medical laboratories and helps to set a level of performance and competency that labs should

attain. The medical laboratory is an important part of patient care as all tests results come from the lab so ensuring your systems are in control is a vital part of this process. An interlaboratory program can provide comfort to the lab by demonstrating that your performance is in line with other labs. When your lab's performance is not in line with others, the interlaboratory program highlights this to you quickly.



PEER



How does IAMQC® Peer help with participation in an interlaboratory program?

IAMQC Peer is a web-based truly real-time peer comparison system. Truly real-time means that all data submitted is included in the peer statistics at the time of report generation or when viewing the 'on-demand' interactive peer statistics. Peer reports can also be scheduled to be emailed monthly.

IAMQC Peer shows labs each of their individual instrument's performance and compares the accuracy and precision of the analytical processes to their peer group. The peer group will contain instruments of the same type from other laboratories using the same lot of QC material and using the same method for the test. The information from the reports and interactive peer statistics in IAMQC Peer can be extremely valuable, indicating the user's performance

relative to their peer group as well as providing powerful troubleshooting tools when attempting to resolve potential problems.

IAMQC Peer has multiple interfacing solutions to allow for the automation of data submission helping busy lab personnel to concentrate on the important activities of testing and result interpretation.

IAMQC Peer contains multiple reports, all of which provide key information to the lab in interpreting their instrument performance.

- **Reagent Lot Report**

Automates the tracking and reporting of reagent lot-to-lot variation.

- **Group Coordinator Report**

A test-by-test listing of statistics of the laboratory and its peer groups for up to 3 levels of control.

Request IAMQC® PEER Demo:
iamqcsupport@technopathcd.com



IAMQC Peer Reports

| | |
|----------------------------|---|
| Reagent Lot Report | ✓ |
| Bias Report | ✓ |
| Exception Notes Report | ✓ |
| Group Coordinator Report | ✓ |
| Levey Jennings Report | ✓ |
| Measurement of Uncertainty | ✓ |
| Monthly Standard Report | ✓ |
| Sigma Metrics Report | ✓ |
| Youden Plot Report | ✓ |

- **Levey-Jennings (LJ) Report**

The LJ report displays individual QC values per analyte for the selected month. It also indicates when a reagent lot was changed.

- **Exceptions Report**

This report details the lab's tests and analytical methods which differ in performance from its peer group using SDI and CVI.

- **Monthly Summary Report**

A rolling twelve-month window of summary statistics, including monthly mean for each test and level, is displayed along with peer group values.

- **Youden Plot**

The Youden plot visualizes both bias and imprecision graphically and can be used to evaluate systematic and/or random error.

- **Six Sigma**

The six sigma report automatically calculates the lab's sigma score based on the Total Allowable Error values entered.

- **Measurement of Uncertainty (MoU)**

Benefits - IAMQC Peer

| | |
|---------------------------------|---|
| Real-time Peer data comparison | ✓ |
| Facilitates Standards approvals | ✓ |
| Centralised data management | ✓ |
| Automatic data submission | ✓ |
| Cloud based system | ✓ |
| User-Friendly | ✓ |

The system calculates the MoU value automatically based on the time-range selected for the lot in question along with the Standard Error of the Mean (SEM) value or the running SD of each test for the time period selected.

- **Bias Report**

The bias report contains all the information in the Group Coordinator report plus a bias score against the cumulative peer mean for each test and is generated in Microsoft Excel format.

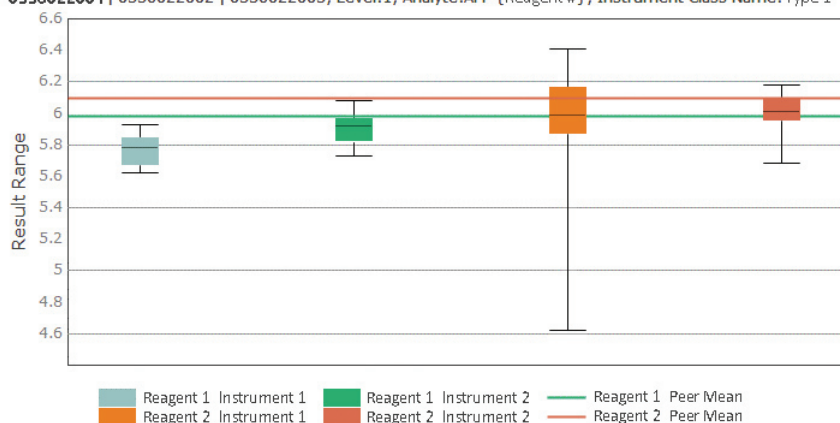
Reagent Lot Report

Lot-to-lot variation affecting calibrators and reagents is a frequent challenge that can affect the laboratory's ability to produce consistent results over time. It is important that laboratories have procedures in place for quantification of this variability, and for determining whether the amount of variation is acceptable for the release of patient results.

To support the clinical laboratory in automating the tracking and reporting of reagent lot-to-lot variation, IAMQC includes the "Reagent Lot Report" in its suite of reports.

Learn more in the **Guide to Reagent Lot Report**, available in the Educational Materials section of the Knowledge Centre on www.technopathcd.com.

0336022001 | 0336022002 | 0336022003; Level:1; Analyte:AFP {Reagent #}; Instrument Class Name: Type 1



Group Coordinator Report

This report provides a test-by-test listing of statistics for the lab and its peer groups for up to 3 levels of control material. A peer group is a group of labs using the same control material on the same test system and the same analytical method. The Group Coordinator Report documents all of the relevant data points submitted to IAMQC® and automatically provides a statistical analysis in table format.

This report provides a centralised review of all instruments from the moment the customer begins to report data and thus facilitates users meeting accreditation requirements, with respect to the storage, retrieval and statistical analysis of quality control data.

| Albumin (ALB) in mg/dL | | | | | | | | | | | | | | | | |
|--|----------------|-------|-------|------|----|------------|------|-------|------|-------|-------|------|----|------------|------|------|
| QC Product: MICHM CSF-Lot # C0511181 | | | | | | | | | | | | | | | | |
| Instrument Class Name: Company A; Reagent: Company A; Method: Immunochemical | | | | | | | | | | | | | | | | |
| Instrument Model: Instrument 1 | | | | | | | | | | | | | | | | |
| Lab ID-Name | S/N | Mean | SD | %CV | N | World Peer | CVI | SDI | CVI | Mean | SD | %CV | N | World Peer | CVI | SDI |
| 99000126-Laboratory 16 | Instrument 1 A | 31.97 | 2.001 | 6.26 | 7 | 0.06 | 1.01 | 0.06 | 1.01 | 62.91 | 3.550 | 5.64 | 8 | 0.09 | 1.06 | 0.09 |
| 99000126-Laboratory 16 | Instrument 1 C | 30.29 | 1.431 | 4.73 | 7 | -0.80 | 0.76 | -0.80 | 0.76 | 60.16 | 2.876 | 4.78 | 7 | -0.74 | 0.90 | 0.90 |
| 99000126-Laboratory 16 | Instrument 1 B | 33.33 | 1.259 | 3.78 | 7 | 0.74 | 0.61 | 0.74 | 0.61 | 64.74 | 1.864 | 2.88 | 7 | 0.64 | 0.54 | 0.54 |
| Affiliation | | 31.86 | 1.979 | 6.21 | 21 | - | - | - | - | 62.62 | 3.334 | 5.32 | 22 | - | - | - |
| World Peer | | 31.86 | 1.979 | 6.21 | 21 | - | - | - | - | 62.62 | 3.334 | 5.32 | 22 | - | - | - |

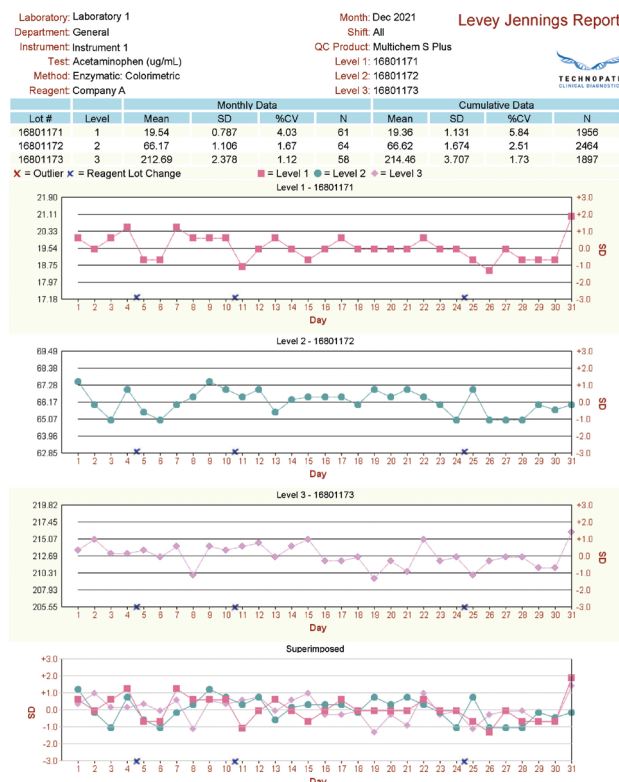
| Glucose (CSFO) in mg/dL | | | | | | | | | | | | | | | | |
|--|-----------------|-------|-------|------|-----|------------|------|-------|------|-------|-------|------|-----|------------|------|-------|
| QC Product: MICHM CSF-Lot # C0511181 | | | | | | | | | | | | | | | | |
| Instrument Class Name: Company B; Reagent: Company B; Method: Hexokinase | | | | | | | | | | | | | | | | |
| Instrument Model: Instrument 2 | | | | | | | | | | | | | | | | |
| Lab ID-Name | S/N | Mean | SD | %CV | N | World Peer | CVI | SDI | CVI | Mean | SD | %CV | N | World Peer | CVI | SDI |
| 99000057-Laboratory 3 | Instrument 2 A1 | 62.03 | 0.609 | 0.98 | 36 | -0.22 | 0.54 | -0.22 | 0.54 | 32.00 | 0.348 | 1.09 | 34 | -0.48 | 0.51 | -0.48 |
| 99000057-Laboratory 3 | Instrument 2 B1 | 61.45 | 0.617 | 1.00 | 33 | -0.73 | 0.56 | -0.73 | 0.56 | 31.82 | 0.459 | 1.44 | 34 | -0.73 | 0.68 | -0.73 |
| 99000059-Laboratory 5 | Module A C1 | 60.91 | 1.026 | 1.68 | 34 | -1.21 | 0.93 | -1.21 | 0.93 | 31.74 | 0.710 | 2.24 | 34 | -0.86 | 1.05 | -0.86 |
| 99000059-Laboratory 5 | Module A C2 | 61.49 | 0.970 | 1.58 | 39 | -0.70 | 0.87 | -0.70 | 0.87 | 32.13 | 0.801 | 2.49 | 39 | -0.29 | 1.17 | -0.29 |
| 99000059-Laboratory 5 | Module A C3 | 62.03 | 1.000 | 1.61 | 36 | -0.22 | 0.89 | -0.22 | 0.89 | 32.28 | 0.615 | 1.90 | 36 | -0.07 | 0.89 | -0.07 |
| 99000059-Laboratory 5 | Module A C4 | 62.03 | 1.000 | 1.61 | 34 | -0.22 | 0.89 | -0.22 | 0.89 | 32.15 | 0.610 | 1.90 | 34 | -0.26 | 0.89 | -0.26 |
| 99000073-Laboratory 13 | Module B C1 | 62.51 | 0.631 | 1.01 | 73 | 0.21 | 0.56 | 0.21 | 0.56 | 32.31 | 0.419 | 1.30 | 74 | -0.02 | 0.61 | -0.02 |
| 99000073-Laboratory 13 | Module B C3 | 62.89 | 0.964 | 1.53 | 76 | 0.55 | 0.85 | 0.55 | 0.85 | 32.72 | 0.567 | 1.73 | 74 | 0.57 | 0.81 | 0.57 |
| 99000074-Laboratory 14 | Module B C1 | 63.00 | N | N | 2 | 0.64 | 0.00 | 0.64 | 0.00 | 33.50 | N | N | 2 | 1.70 | 0.99 | 1.70 |
| 99000074-Laboratory 14 | Module B C2 | 63.30 | 0.971 | 1.53 | 64 | 0.91 | 0.85 | 0.91 | 0.85 | 32.85 | 0.667 | 2.03 | 65 | 0.75 | 0.95 | 0.75 |
| Affiliation | | 62.28 | 1.124 | 1.80 | 427 | - | - | - | - | 32.33 | 0.688 | 2.13 | 426 | - | - | - |
| World Peer | | 62.28 | 1.124 | 1.80 | 427 | - | - | - | - | 32.33 | 0.688 | 2.13 | 426 | - | - | - |

Levey Jennings Report

The Levey Jennings Report displays individual daily QC values for the selected month for a specific analyte. The report can be generated for two or three levels of QC material.

Reagent lot changes are also highlighted on the report.

This report also provides a super-imposed version of all QC levels at the bottom of each sheet, highlighting any level specific bias.



Reagent lot change is indicated by a blue 'x' on level one in the above report.

Exceptions Report

This report details the laboratory's tests and analytical methods which differ in performance from its peer group using SDI and CVI criteria. If a specific assay does not meet specific performance criteria the information is highlighted to the user as an exception.

The Exceptions Report indicates the following flags:

Flag L - This value did not pass the Laboratory Outlier check, which highlights values more than ± 3 standard deviations from the lab's mean for the month. This value was included in the calculation of the lab's mean and SD for this month.

| Acetaminophen (ug/mL) | | | | | |
|---|---------|----|---|-------------------------|-----------|
| | | | | Enzymatic: Colorimetric | |
| Control | Mean | SD | N | LTD Mean | Shift |
| Level 3 Lot # 16801173 02/05/2020 19:12:00; GR=[132.6-309.4] | 220.00L | - | 1 | 214.46 | All Shift |
| Alanine Aminotransferase (ALT) (U/L) | | | | | |
| | | | | UV with P5P | |
| Control | Mean | SD | N | LTD Mean | Shift |
| Level 1 Lot # 16801171 21/05/2020 02:12:00; GR=[17.16-40.04] | 35.00L | - | 1 | 32.94 | All Shift |
| Alkaline Phosphatase (ALP) (U/L) | | | | | |
| | | | | PNPP: AMP BUFFER | |
| Control | Mean | SD | N | LTD Mean | Shift |
| Level 3 Lot # 16801173 10/05/2020 18:06:00; GR=[220.8-515.2] | 334.00L | - | 1 | 355.71 | All Shift |
| Level 3 Lot # 16801173 12/05/2020 19:00:00; GR=[220.8-515.2] | 333.00L | - | 1 | 355.71 | All Shift |
| Bilirubin: Total (TBIL) (mg/dL) | | | | | |
| | | | | Jendrassik Grof | |
| Control | Mean | SD | N | LTD Mean | Shift |
| Level 3 Lot # 16801173 03/05/2020 18:52:00; GR=[5.05-11.79] | 8.01L | - | 1 | 8.52 | All Shift |

Flag P - This value did not pass the Peer Outlier Check, which highlights values more than +/- 3 standard deviations from the peer's mean for the month.

This value was included in the calculation of the peer's mean and SD for this month.

Monthly Summary Report

For each test, and control level, this report displays summary statistics for the last twelve individual months and Lot-to-Date period for the laboratory and its peer groups. This data is useful for long-term intra-laboratory and inter-laboratory comparisons.

This report provides the customer with an indication of the 'usual' method accuracy and precision, allowing them to view any unexpected trending or increases in imprecision. The report also displays the customer's monthly SDI and CVI, indicating any shifts from the peer group.

Flag G - This value did not pass the Gross Outlier Check, which excludes extremely discrepant data that falls outside of present limits for each test. This data was not processed and was excluded from the IAMQC® Reports and the calculation of peer stats.

The 'monthly summary' report facilitates the user investigating changes in performance over time.

Monthly Summary Report
January 2022
Multichem NB
Affiliation: Laboratory Group

| | | LTD | Dec 2021 | Nov 2021 | Oct 2021 | Sep 2021 | Aug 2021 | Jul 2021 | Jun 2021 | May 2021 | Apr 2021 | Mar 2021 | Feb 2021 | Jan 2021 |
|---|-------|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Bilirubin: Direct (DBIL) (mg/dL) - All Shift | | | | | | | | | | | | | | |
| MICHEM NB-Lot # 8030717B | | | | | | | | | | | | | | |
| Your Lab | Mean | 4.85 | 4.85 | 4.87 | 4.82 | 4.83 | 4.82 | 4.78 | 4.88 | 4.90 | 4.93 | 4.87 | 4.93 | 4.88 |
| | SD | 0.111 | 0.091 | 0.092 | 0.095 | 0.112 | 0.099 | 0.107 | 0.110 | 0.096 | 0.118 | 0.113 | 0.078 | 0.111 |
| | %CV | 2.28 | 1.86 | 1.89 | 1.97 | 2.31 | 2.05 | 2.23 | 2.26 | 1.97 | 2.39 | 2.32 | 1.58 | 2.28 |
| | N | 1295 | 64 | 75 | 91 | 100 | 98 | 75 | 78 | 90 | 68 | 90 | 84 | 75 |
| Test System Peer | | | | | | | | | | | | | | |
| | Mean | 4.89 | 4.87 | 4.86 | 4.84 | 4.85 | 4.85 | 4.85 | 4.90 | 4.95 | 4.96 | 4.91 | 4.94 | 4.92 |
| | Peers | 10 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | SDI | -0.33 | -0.25 | 0.06 | -0.22 | -0.14 | -0.25 | -0.57 | -0.18 | -0.41 | -0.21 | -0.31 | -0.08 | -0.42 |
| | CVI | 6.86 | 6.89 | 6.85 | 6.77 | 6.84 | 6.79 | 6.90 | 6.88 | 6.89 | 6.99 | 6.94 | 6.84 | 6.88 |
| Bilirubin: Total (TBIL) (mg/dL) - All Shift | | | | | | | | | | | | | | |
| MICHEM NB-Lot # 8030717B | | | | | | | | | | | | | | |
| Your Lab | Mean | 17.83 | 17.62 | 18.27 | 17.99 | 17.76 | 17.80 | 17.73 | 17.51 | 17.81 | 17.75 | 17.78 | 17.99 | 17.73 |
| | SD | 0.319 | 0.245 | 0.279 | 0.266 | 0.381 | 0.182 | 0.250 | 0.320 | 0.297 | 0.231 | 0.187 | 0.212 | 0.301 |
| | %CV | 1.79 | 1.39 | 1.53 | 1.64 | 2.14 | 1.02 | 1.41 | 1.82 | 1.68 | 1.30 | 1.05 | 1.18 | 1.70 |
| | N | 1988 | 94 | 119 | 132 | 121 | 155 | 120 | 126 | 144 | 111 | 132 | 127 | 125 |
| Test System Peer | | | | | | | | | | | | | | |
| | Mean | 17.90 | 17.76 | 17.94 | 17.85 | 17.88 | 17.89 | 17.82 | 17.90 | 17.86 | 17.82 | 17.87 | 17.94 | 17.82 |
| | Peers | 16 | 12 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | SDI | -0.21 | -0.42 | 0.04 | 0.46 | -0.35 | -0.27 | -0.28 | -1.09 | -0.86 | -0.53 | -0.34 | 0.11 | -0.46 |
| | CVI | 0.93 | 0.70 | 0.79 | 0.97 | 1.32 | 0.55 | 0.78 | 0.91 | 1.05 | 0.75 | 0.70 | 0.50 | 0.74 |

Youden Plot Report

Youden Plot Report

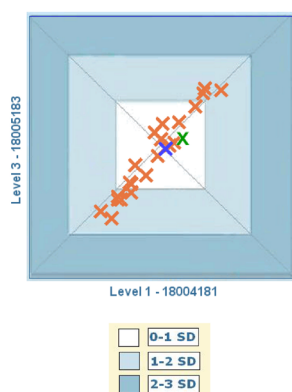
Laboratory: Laboratory Name
Department: GENERAL
Instrument: Instrument A
Test: Activated Aspartate Aminotransferase (UL)

Month: June, 2020
Shift: All
QC Product: MULTICHEM S Plus (ASSAYED)
Level 1: 18004181
Level 3: 18005183

| | | Level 1 | | Level 3 | |
|------------------|-------|---------------|-------------|---------------|-------------|
| | | Current Month | Lot To Date | Current Month | Lot To Date |
| Your Lab | Mean | 42.24 | 41.66 | 41.99 | 41.49 |
| Test System Peer | Mean | 41.99 | 41.49 | 41.99 | 41.49 |
| Your Lab | SD | 0.68 | 1.22 | 0.81 | 1.29 |
| Test System Peer | SD | 0.68 | 1.22 | 0.81 | 1.29 |
| Your Lab | %CV | 1.61 | 2.93 | 1.93 | 3.11 |
| Test System Peer | %CV | 1.61 | 2.93 | 1.93 | 3.11 |
| Your Lab | SDI | -- | 0.47 | -- | 0.39 |
| Test System Peer | SDI | -- | 0.47 | -- | 0.39 |
| Your Lab | CVI | -- | 0.55 | -- | 0.62 |
| Test System Peer | CVI | -- | 0.55 | -- | 0.62 |
| Your Lab | N | 87 | 1354 | 1301 | 54965 |
| Test System Peer | N | 87 | 1354 | 1301 | 54965 |
| Your Lab | #Inst | -- | 23 | -- | 76 |
| Test System Peer | #Inst | -- | 23 | -- | 76 |

Test System Peer: Instrument A
Method: NONE

Legend: X = Peer Data, X = Your Lab, X = Your Lab Instrument



The Youden Report describes internal laboratory performance against the test system peer and method principle peer using the Youden Plot design. Laboratory data is tabularised at the top of the page by individual analyte. The lower half of the page provides a laboratory vs. peer comparison in the form of a Youden plot. The centre of each Youden plot represents the mean of the associated peer group.

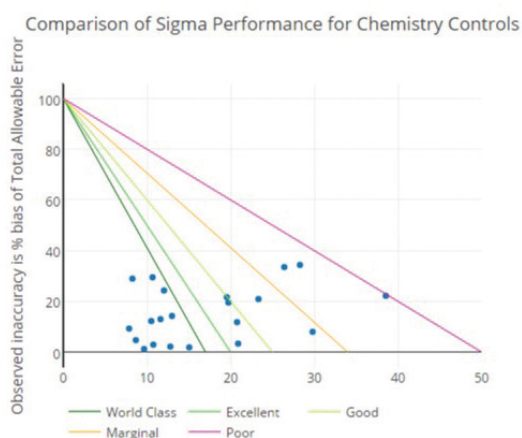
It is appropriate to assume that each laboratory has its own systematic error. A user that has good precision could unknowingly have an error within their laboratory that is operating to displace their results from the values achieved by the rest of the peer group. The Youden Plot can be used to visualise both bias and imprecision, where it exists, and can be used to evaluate systematic and / or random error.

Six Sigma Metrics

IAMQC Peer offers end-users the opportunity to automatically calculate and review their sigma metric performance. The system will automatically calculate imprecision and bias and once the end-user has defined their acceptability

criteria (i.e Total Allowable Error), the software will automatically calculate a sigma score for every assay that is tested in the laboratory.

Six Sigma Method Decision Chart



Sigma Metrics:

| Sigma Summary: | | | | |
|-------------------------------------|--------|-------------------------|-------------------------|-------------------------|
| Analyte | Units | TCD Level 1 Sigma Score | TCD Level 2 Sigma Score | TCD Level 3 Sigma Score |
| C-Peptide | ng/mL | 6 | 6 | 6 |
| Cortisol | nmol/L | 6 | 6 | 6 |
| Ferritin | ng/mL | 2 | 6 | 4 |
| High Sensitive Troponin I | ng/L | 4 | 4 | 6 |
| Human Chorionic Gonadotropin (BhCG) | IU/L | 2 | 3 | 6 |
| Thyroid Stimulating Hormone (TSH) | mIU/L | 6 | 6 | 6 |
| Triiodothyronine: Free (FT3) | pmol/L | 3 | 4 | 2 |

Sigma Summary Report

Sigma Detailed:

| Analyte | Units | Instrument | Level 1 | | | | | | | | Level 2 | | | | | | | | Level 3 | | | | | | | |
|-------------------------------------|--------|--------------|---------|-------|-------|-----------|--------|-------|------------|-------------|---------|-------|------|-----------|--------|-------|------------|-------------|---------|-------|------|-----------|--------|-------|------------|-------------|
| | | | Mean | SD | % CV | Peer Mean | % Bias | % TEa | Sigma Calc | Sigma Score | Mean | SD | % CV | Peer Mean | % Bias | % TEa | Sigma Calc | Sigma Score | Mean | SD | % CV | Peer Mean | % Bias | % TEa | Sigma Calc | Sigma Score |
| C-Peptide | ng/mL | Instrument A | 342.00 | 11.11 | 3.25 | 330.22 | 3.57 | 25.00 | 6.60 | 6 | 1372.65 | 29.77 | 2.17 | 1356.77 | 1.17 | 25.00 | 10.99 | 6 | 2614.64 | 63.13 | 2.41 | 2606.88 | 0.30 | 25.00 | 10.23 | 6 |
| Cortisol | nmol/L | Instrument A | 101.49 | 2.95 | 2.91 | 98.31 | 3.23 | 25.00 | 7.49 | 6 | 403.61 | 10.86 | 2.69 | 400.67 | 0.73 | 25.00 | 9.02 | 6 | 911.26 | 17.93 | 1.97 | 932.68 | 2.30 | 25.00 | 11.54 | 6 |
| Ferritin (I) | ng/mL | Instrument A | 21.22 | 0.95 | 4.49 | 20.08 | 5.70 | 17.00 | 2.52 | 2 | 172.24 | 4.41 | 2.56 | 171.71 | 0.31 | 17.00 | 6.52 | 6 | 370.94 | 12.45 | 3.36 | 359.02 | 3.32 | 17.00 | 4.08 | 4 |
| High Sensitive Troponin I | ng/L | Instrument A | 21.54 | 0.84 | 3.91 | 20.65 | 4.33 | 20.00 | 4.01 | 4 | 57.91 | 2.41 | 4.16 | 56.58 | 2.35 | 20.00 | 4.25 | 4 | 3920.80 | 83.70 | 2.13 | 3702.30 | 5.90 | 20.00 | 6.60 | 6 |
| Human Chorionic Gonadotropin (BhCG) | IU/L | Instrument A | 4.09 | 0.47 | 11.57 | 4.38 | 6.64 | 30.00 | 2.02 | 2 | 23.09 | 1.62 | 7.00 | 24.63 | 6.26 | 30.00 | 3.39 | 3 | 454.60 | 17.45 | 3.84 | 457.57 | 0.65 | 30.00 | 7.65 | 6 |
| Thyroid Stimulating Hormone (TSH) | mIU/L | Instrument A | 0.04 | 0.00 | 2.85 | 0.04 | 5.75 | 23.70 | 6.29 | 6 | 5.99 | 0.12 | 1.96 | 5.60 | 6.87 | 23.70 | 8.59 | 6 | 20.13 | 0.50 | 2.49 | 19.56 | 2.89 | 23.70 | 8.35 | 6 |
| Triiodothyronine: Free (FT3) | pmol/L | Instrument A | 4.24 | 0.14 | 3.28 | 4.20 | 0.88 | 11.00 | 3.09 | 3 | 7.88 | 0.18 | 2.30 | 7.91 | 0.37 | 11.00 | 4.62 | 4 | 15.57 | 0.48 | 3.11 | 16.18 | 3.78 | 11.00 | 2.32 | 2 |

Sigma Detailed Summary Report

Measurement of Uncertainty

| Instrument Class Name | Analyte | Method | Reagent | Units of Measure | Source | Level | Points | Mean | SD | CV(%) | SEM | Calculated MoU | Expanded MoU | Inter-assay MoU |
|-----------------------|--------------------------------------|--------|------------|------------------|-----------------|-------|--------|-----------|------------|-------|-----|----------------|--------------|-----------------|
| Supplier A | Activated Aspartate Aminotransferase | NONE | Supplier A | U/L | Peer group | 1 | 15836 | 32.870632 | 1.138398 | 3.46% | | | | 2.23126008 |
| Supplier A | Activated Aspartate Aminotransferase | NONE | Supplier A | U/L | All instruments | 1 | 32 | 32.25 | 0.71842121 | 2.23% | | | | 1.40810557 |
| Supplier A | Activated Aspartate Aminotransferase | NONE | Supplier A | U/L | INSTRUMENT 1 | 1 | 16 | 31.875 | 0.61913919 | 1.94% | | 1.36233133 | 2.72466267 | 1.21351281 |
| Supplier A | Activated Aspartate Aminotransferase | NONE | Supplier A | U/L | INSTRUMENT 2 | 1 | 16 | 32.625 | 0.61913919 | 1.90% | | 1.36233134 | 2.72466268 | 1.21351281 |
| Supplier A | Albumin | NONE | Supplier A | g/dL | Peer group | 1 | 39 | 3.2717949 | 0.0455881 | 1.39% | | | | 0.0935268 |
| Supplier A | Albumin | NONE | Supplier A | g/dL | All instruments | 1 | 32 | 3.265625 | 0.04622587 | 1.48% | | | | 0.09458151 |
| Supplier A | Albumin | NONE | Supplier A | g/dL | INSTRUMENT 1 | 1 | 16 | 3.2375 | 0.05 | 1.54% | | 0.11001818 | 0.22003636 | 0.098 |
| Supplier A | Albumin | NONE | Supplier A | g/dL | INSTRUMENT 2 | 1 | 16 | 3.29375 | 0.025 | 0.76% | | 0.05500909 | 0.11001818 | 0.049 |
| Supplier A | Alkaline Phosphatase | NONE | Supplier A | U/L | Peer group | 1 | 16105 | 46.01112 | 2.622339 | 5.70% | | | | 5.13978444 |
| Supplier A | Alkaline Phosphatase | NONE | Supplier A | U/L | All instruments | 1 | 32 | 45.34375 | 1.55769422 | 3.44% | | | | 3.05308067 |
| Supplier A | Alkaline Phosphatase | NONE | Supplier A | U/L | INSTRUMENT 1 | 1 | 16 | 45.3125 | 2.08865986 | 4.61% | | 4.59581114 | 9.19162228 | 4.09377332 |
| Supplier A | Alkaline Phosphatase | NONE | Supplier A | U/L | INSTRUMENT 2 | 1 | 16 | 45.375 | 0.80622577 | 1.78% | | 1.77398986 | 3.54797971 | 1.58020252 |

Measurement of Uncertainty has become an important consideration in many laboratories and is referred to by many of the accreditation bodies as a requirement during audits. There are a number of factors which must be considered when calculating uncertainty, including the chosen method, Bias, analytical errors and so on. If uncertainty is quantified it is no longer

uncertainty but the confidence interval within which the results fall. Uncertainty should be assessed regularly and attempts made to improve the value. The Measurement of Uncertainty report is generated in MS Excel format from the online IAMQC® Peer account.

Bias Report

The Bias Report is a test-by-test listing of statistics for the laboratory and its peer groups for up to 3 levels of control material. It documents each instrument's performance compared to the world peer group and any selected affiliate group, in a Microsoft Excel file. It displays each instrument's

Mean, SD, %CV and N of tests for the selected month, along with the SDi, CVi and %Bias comparison with the world peer and affiliate groups. SDi results greater than 2 and CVi results greater than 1 are highlighted on the report to aid in troubleshooting assay performance.

| Analyte | Method | Reagent | Level | Units | Instrument Class Name | Source | #Inst | N | Mean | SD | %CV | Bias World, % | Absolute Bias World, % | SDi | CVi | Bias World LTD, % | Absolute Bias LTD, % |
|----------------------|--------|------------|-------|--------|-----------------------|----------------|-------|------|------------|------------|---------|---------------|------------------------|-----------|----------|-------------------|----------------------|
| CK-MB | CLIA | Supplier A | 1 | ng/mL | Instrument Model A | World Peer LTD | 6 | 4690 | 3.078942 | 0.298058 | 9.6805 | | | | | | |
| CK-MB | CLIA | Supplier A | 1 | ng/mL | Instrument Model A | World Peer | 6 | 285 | 3.088741 | 0.353153 | 11.4336 | | | | | | |
| CK-MB | CLIA | Supplier A | 1 | ng/mL | Instrument Model A | Instrument A | 1 | 64 | 3.215668 | 0.213218 | 6.6306 | 4.1093 | 4.1093 | 0.359411 | 0.579922 | 4.4407 | 4.4407 |
| CK-MB | CLIA | Supplier A | 1 | ng/mL | Instrument Model A | Instrument B | 1 | 47 | 3.33834 | 0.217239 | 6.5074 | 8.0809 | 8.0809 | 0.706773 | 0.569147 | 8.4249 | 8.4249 |
| CK-MB | CLIA | Supplier A | 2 | ng/mL | Instrument Model A | World Peer LTD | 6 | 5858 | 8.737137 | 0.60401 | 6.9131 | | | | | | |
| CK-MB | CLIA | Supplier A | 2 | ng/mL | Instrument Model A | World Peer | 6 | 324 | 8.587012 | 0.727331 | 8.4701 | | | | | | |
| CK-MB | CLIA | Supplier A | 2 | ng/mL | Instrument Model A | Instrument A | 1 | 63 | 8.831784 | 0.422677 | 4.7859 | 2.8505 | 2.8505 | 0.336535 | 0.565035 | 1.0833 | 1.0833 |
| CK-MB | CLIA | Supplier A | 2 | ng/mL | Instrument Model A | Instrument B | 1 | 47 | 9.085163 | 0.452995 | 4.9861 | 5.8012 | 5.8012 | 0.684903 | 0.588671 | 3.9833 | 3.9833 |
| CK-MB | CLIA | Supplier A | 3 | ng/mL | Instrument Model A | World Peer LTD | 6 | 5539 | 40.352058 | 2.602779 | 6.4502 | | | | | | |
| CK-MB | CLIA | Supplier A | 3 | ng/mL | Instrument Model A | World Peer | 6 | 337 | 39.246922 | 2.473257 | 6.3018 | | | | | | |
| CK-MB | CLIA | Supplier A | 3 | ng/mL | Instrument Model A | Instrument A | 1 | 56 | 39.605389 | 1.14549 | 2.8923 | 0.9134 | 0.9134 | 0.144937 | 0.458964 | -1.8504 | 1.8504 |
| CK-MB | CLIA | Supplier A | 3 | ng/mL | Instrument Model A | Instrument B | 1 | 41 | 39.126882 | 1.365286 | 3.4894 | -0.3059 | 0.3059 | -0.048535 | 0.553715 | -3.0362 | 3.0362 |
| Human Chorionic Gona | CLIA | Supplier A | 1 | miU/mL | Instrument Model A | World Peer LTD | 6 | 4770 | 3.982677 | 0.557847 | 14.0068 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 1 | miU/mL | Instrument Model A | World Peer | 6 | 290 | 3.865814 | 0.471538 | 12.1976 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 1 | miU/mL | Instrument Model A | Instrument A | 1 | 65 | 3.990796 | 0.185177 | 4.6401 | 3.233 | 3.233 | 0.265052 | 0.380411 | 0.2039 | 0.2039 |
| Human Chorionic Gona | CLIA | Supplier A | 1 | miU/mL | Instrument Model A | Instrument B | 1 | 47 | 4.08301 | 0.192619 | 4.7176 | 5.6184 | 5.6184 | 0.460612 | 0.386765 | 2.5192 | 2.5192 |
| Human Chorionic Gona | CLIA | Supplier A | 2 | miU/mL | Instrument Model A | World Peer LTD | 6 | 5852 | 33.285198 | 1.445802 | 4.3437 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 2 | miU/mL | Instrument Model A | World Peer | 6 | 320 | 33.551464 | 1.332085 | 3.9703 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 2 | miU/mL | Instrument Model A | Instrument A | 1 | 63 | 33.730195 | 0.741968 | 2.1997 | 0.5327 | 0.5327 | 0.134174 | 0.554039 | 1.3369 | 1.3369 |
| Human Chorionic Gona | CLIA | Supplier A | 2 | miU/mL | Instrument Model A | Instrument B | 1 | 47 | 32.895797 | 1.081255 | 3.2869 | -1.9542 | 1.9542 | -0.492211 | 0.827872 | -1.1699 | 1.1699 |
| Human Chorionic Gona | CLIA | Supplier A | 3 | miU/mL | Instrument Model A | World Peer LTD | 6 | 5619 | 615.250183 | 23.699465 | 3.852 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 3 | miU/mL | Instrument Model A | World Peer | 6 | 336 | 614.136047 | 24.10911 | 3.9257 | | | | | | |
| Human Chorionic Gona | CLIA | Supplier A | 3 | miU/mL | Instrument Model A | Instrument A | 1 | 57 | 633.894782 | 19.81675 | 3.1262 | 3.2173 | 3.2173 | 0.819555 | 0.796342 | 3.0304 | 3.0304 |
| Human Chorionic Gona | CLIA | Supplier A | 3 | miU/mL | Instrument Model A | Instrument B | 1 | 41 | 619.207356 | 19.262815 | 3.1109 | 0.8258 | 0.8258 | 0.210348 | 0.792445 | 0.6432 | 0.6432 |
| NT Pro-BNP | CLIA | Supplier A | 1 | pg/mL | Instrument Model A | World Peer LTD | 6 | 4838 | 22.455153 | 1.754119 | 7.8117 | | | | | | |
| NT Pro-BNP | CLIA | Supplier A | 1 | pg/mL | Instrument Model A | World Peer | 6 | 300 | 20.576593 | 1.192686 | 5.7963 | | | | | | |
| NT Pro-BNP | CLIA | Supplier A | 1 | pg/mL | Instrument Model A | Instrument A | 1 | 66 | 20.693636 | 1.266695 | 6.1212 | 0.5688 | 0.5688 | 0.098134 | 1.056053 | -7.8446 | 7.8446 |
| NT Pro-BNP | CLIA | Supplier A | 1 | pg/mL | Instrument Model A | Instrument B | 1 | 48 | 20.497076 | 1.367398 | 6.6712 | -0.3864 | 0.3864 | -0.066671 | 1.150941 | -8.7199 | 8.7199 |
| NT Pro-BNP | CLIA | Supplier A | 2 | pg/mL | Instrument Model A | World Peer LTD | 6 | 6097 | 196.823831 | 9.939983 | 5.0502 | | | | | | |
| NT Pro-BNP | CLIA | Supplier A | 2 | pg/mL | Instrument Model A | World Peer | 6 | 349 | 189.7665 | 8.26889 | 4.3574 | | | | | | |
| NT Pro-BNP | CLIA | Supplier A | 2 | pg/mL | Instrument Model A | Instrument A | 1 | 64 | 192.26078 | 8.392119 | 4.365 | 1.3144 | 1.3144 | 0.301646 | 1.001744 | -2.3183 | 2.3183 |
| NT Pro-BNP | CLIA | Supplier A | 2 | pg/mL | Instrument Model A | Instrument B | 1 | 48 | 190.0625 | 8.859195 | 4.6612 | 0.156 | 0.156 | 0.035797 | 1.06972 | -3.4352 | 3.4352 |
| NT Pro-BNP | CLIA | Supplier A | 3 | pg/mL | Instrument Model A | World Peer LTD | 6 | 5664 | 2904.43679 | 167.237814 | 5.758 | | | | | | |

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