IEQAS
Irish External Quality Assessment Scheme CLG

B06 Nutgrove Enterprise Park, Rathfarnham, Dublin 14
www.ieqas.ie info@ieqas.ie P: 01 4957356

Participant Handbook: IEQAS and Labquality schemes

This handbook provides details for both IEQAS EQA schemes and the full range of over 150 schemes available through Labquality, the Finnish EQA provider for whom IEQAS is the sole partner in Ireland.

Index

1. General Information

All General Information can be found at www.ieqas.ie or by using the following links:

IEQAS Programme gives details on all EQA schemes (IEQAS and Labquality) available through IEQAS.

Labquality Programme gives details on Labquality schemes only

IEQAS distribution dates/analytes

Labquality distribution dates

Additional Scheme information is available in EQA Programme - National Schemes (IEQAS) and EQA Programme - Partner Schemes (Labquality)

IEQAS Privacy Statement

Labquality Privacy Statement

2. Quality System, Queries and Complaints

Our Quality System Information area includes Accreditation/Certification details for IEQAS and Labquality (as required for supplier evaluation) and the IEQAS Complaints Procedure & Quality Policy.

Queries

Please email IEQAS for all queries about IEQAS and Labquality schemes.

Email: info@ieqas.ie

Patricia Howley (Operations and Quality Manager) patricia@ieqas.ie

Anne Kane (Scheme Manager) anne@ieqas.ie

Maria Phelan (Scheme and Quality Administrator) maria@ieqas.ie

Phone: 01 4957356

If there is any issue where you feel IEQAS has not responded in a satisfactory manner, please refer to our Complaints Procedure.

3. Scheme Orders

New Orders

If you are new to IEQAS (or Labquality), or you are an existing participant who is interested in joining a new scheme during the year, please contact us at info@ieqas.ie. We will respond with full details and instructions on how to join our schemes.

Annual re-ordering

IEQAS will email existing participants to inform them of when and how to submit their annual re-order. This usually occurs in November each year. Your current year's order may then be re-submitted or amended for the subsequent year.

Information for Annual re-orders:

- Login to your account on www.ieqas.ie
- Click on the Annual Reorders tab
- Click the blue **Re-order** button to re-order the same schemes as for the previous year.
- The **ADD MORE** button allows addition of other schemes. Select from Conference, National schemes or Partner schemes. The **SEARCH** button at the top of the page, allows you to search under the scheme name or code. To remove a scheme, just select the delete button on the right-hand
- You can pre-order places for IEQAS Annual Participant's Conference at the early bird rate
- You may **Print Quote**, e.g. for internal financial approval; chosen schemes will remain in your Quote (top right of screen) if you wish to alter and/or proceed with your order at a later stage
- Follow the online instructions to complete the order.
- **Billing Details** - please include email address/address for invoice.
- If available, include a **Purchase Order Number** and details of your laboratory **Head of Department** (these may be added at a later stage)
- IEQAS will contact you if there are any issues with your order
- Please contact IEQAS office (01 4957356, info@ieqas.ie) if you have any queries, or wish to amend the order

4. Laboratory Contacts

When a lab registers for a scheme with IEQAS, we ask for a nominated contact name and email address.

IEQAS schemes

Primary Contact: We ask each participating lab to nominate their primary contact

- Person responsible for placing orders
- First point of contact for IEQAS
- Will receive sample notification email (IEQAS schemes)
- Name is on delivery address for samples
- Can enter results online
- Has access to Confidential Zone on the IEQAS website

Secondary contact: Labs may also nominate a secondary contact

- Will receive sample notification email (IEQAS schemes)
- Name is on delivery address for samples
- Can enter results online
- Has access to Confidential Zone on the IEQAS website

Reports: Reports are available online for the primary and secondary contacts. Labs may also nominate an additional contact for reports. We will email your IEQAS reports to up to your three nominated contacts.

Passwords for IEQAS Website

Primary and secondary contacts need to set up their password so that they can have full access to the IEQAS website.

Click on **Login** tab on www.ieqas.ie

To set up your password for the first time: click on Forgotten password. Enter your registered email address and the system will contact you to allow you to set up your password.

Email address and Password

- Email address is the one associated with your IEQAS account.
- The Password is generated by the participant.
- Forgotten Password will permit access to a password reset link.

Labquality schemes

Primary contact: We ask each participating lab to nominate their primary contact

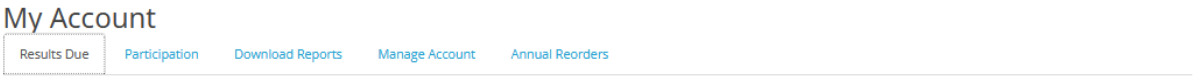
- Person responsible for placing orders (register with IEQAS)
- First point of contact for IEQAS
- Name on delivery address for samples
- Has access to Confidential Zone on the IEQAS website
- IEQAS will send you a Labquality client code and password for access to www.Labscala.fi (portal for entry of Labquality results)

Individual scheme contacts:

- Labquality have a facility where you can enter one or more contact emails for each individual scheme (enter on Labscala)
- This can be set up/amended by you when you are entering your results
- Email notifications/reminders will be sent to scheme registered contacts

5. IEQAS Website

When you login to the IEQAS website, www.ieqas.ie the following tabs are available:



- **Results Due**: This page will list any/all results due for open distributions for IEQAS schemes. Your result sheets for open distributions are available here for download.

- **Participation**: This is the list of schemes (IEQAS & Labquality) that you have registered for IEQAS lab code and Labquality client number show here.

- **Download Reports**: Subtab with all the reports that you have access to download. Search options are available.
  Note: For historical reports not available here, please contact us at info@ieqas.ie.

- **Manage Account**: You can edit your account or contact information and update your password here.

- **Annual Reorders**:
  This is available each November for annual orders only. Click on the re-order button to view your current schemes. This may be accepted or amended, and re-ordered for the coming year. IEQAS will email participants when Annual Re-ordering is open.
  Contact info@ieqas.ie directly for new/additional orders at other times of the year.

Other information available through our Confidential Zone tab includes:

- IEQAS Participant Handbook
- IEQAS Programmes and Fees
- Annual Conference Presentations

6. Result Submission and Reports: IEQAS Schemes

Clinical Chemistry
HbA1c
Full Blood Count (FBC)
Blood Cell Morphology (BCM)

IEQAS Scheme Result Submission

Login in to the www.ieqas.ie to submit your IEQAS results.
Results due page will open if any results for IEQAS schemes are due.
The submission status will state "Pending" when the distribution is open and results have yet to be submitted.
To enter results:

- Choose Batch/Profile required and click on Submit results.
- Enter Date Received and Date Tested
- Enter results/comments**
- Review results entered (Print screen if required)
- **Submit** (or Cancel if you want to re-enter results)
- Submission Status will change from Pending to Submitted
- Enter results for subsequent samples/analysers by repeating the process
- Submitted results may be amended up until the closing date

Log Out when completed
Email: Participants will receive an email when results have been submitted and again if results are changed and re-submitted.
Notes **

- **HbA1c for POCT meters**: Enter Tested by (initials only) & Cartridge lot
- **BCM**: Enter any additional comments and/or suggested diagnosis in comments section
- **Analyser/Method/Analyte change:** Enter in comments section or contact info@ieqas.ie
- Results that are **greater than or less than** your analytical range (>/<): Leave result box empty but add result to comment box.

If you have any difficulties or queries, please contact IEQAS.

IEQAS Scheme Reports

Reports are emailed to registered report participants as they become available.

Reports are also available to participants online www.ieqas.ie using registered login details

- Click **Download Reports** tab
- Select/Search for report
- Download EQA Report and/or Download Summary

Report amendments:

If an error has been made in the reporting of results (e.g. transcription error), participants can apply to IEQAS (info@ieqas.ie) to have their reports amended. They must supply original evidence of correct results. Results may be amended and reports re-issued (with comment) OR, a comment added to the next report, depending on the circumstances involved (at the discretion of IEQAS).

Report Interpretation:

Details on how to interpret the IEQAS scheme reports are included in this handbook. Please see relevant scheme for details. If you require repeat samples, please contact IEQAS.

7. Result Submission and Reports: Labquality schemes

A full list of Labquality schemes is available on the IEQAS website. See links in Section 1 of this handbook.

Contact IEQAS if you have any queries about Labquality schemes, including quality issues, report queries and requests for repeat/validation samples.

Labquality Website

Labquality Website: www.Labquality.fi

- Participants will have a Labquality Username (5 digit Client Code) which will be issued to you by IEQAS, when you join a Labquality scheme
- We will send you a Password, which you can change if required
- If you have forgotten password, click **Forgot your password?** to reset
- Contact IEQAS if unable to reset your password
- Result entry and reports are available through the **Labscala** portal on the Labquality website
- Use your Labquality username and password to enter

LabScala

Entering Labquality results through Labscala

- Once logged in, a table of your open distributions will be displayed on the left-hand side. Click on **Fill Results** to submit your data.

- **HELP Button**
  Select to access instructions including submitting results (each scheme) and interpretation of reports. IEQAS suggests that you print out the LabScala User Instructions document for full, up to date details on using LabScala.

- **My EQA & shortcuts:**
  Result entry and a list of orders (made through IEQAS) are available here. This section also has information on the **Labquality Privacy Notice** and the **Delivery calendar**

- **Reports & messages:**
  Displays your recent reports in yellow. Older reports are available through the View Reports link. Messages common to all LabScala users are also displayed here.

Note: Paper submission: Some schemes results are submitted by completing the enclosed paper result form and emailing it to info@labquality.fi

8. IEQAS CLINICAL CHEMISTRY SCHEME

General Details

Sample frequency:	Monthly
Sample type:	Residual patient pool (minimum 3 times/year)/Liquid/Lyophilised sample
Suitability:	Suitable for laboratory analysers. Please contact IEQAS for POCT analyser suitability

Chemistry Scheme Analytes

Albumin Albumin adjusted Calcium Calcium Chloride Creatinine Estimated Glomerular Filtration Rate (eGFR) Glucose High Density Lipoprotein (HDL) Iron Lactate Lithium Low Density Lipoprotein (LDL) Magnesium Osmolality Phosphate Potassium Sodium Total Bilirubin Total Cholesterol Total Protein Transferrin Triglyceride Urate Urea	Enzymes: Alanine Aminotransferase (ALT) Aspartate Aminotransferase (AST) Alkaline Phosphatase (ALP) Amylase (AMY) Creatine Kinase (CK) Gamma-Glutamyl Transferase (GGT) Lactate Dehydrogenase (LDH)
Some analytes are divided into subgroups. See **Analyte Subgroups**[1] below for details.	

eGFR: Patient details required for the calculation of eGFR will be included on the result received with your sample

Clinical Chemistry EQA Samples

Caution

Standard precautions should be used when handling QC specimens derived from human blood to minimise the risk of potential transmission of infection.

Liquid sample/residual pooled sample: Storage, Preparation and Analysis

Storage:

- Test as soon as possible after receipt, otherwise store at 2-8°C (until distribution closing date)
- Sample may be frozen (-20°C) for long-term storage
- Protect from light

Preparation:

- Ensure the sample is at room temperature (RT) and mix gently before use

Analysis:

- Analyse as for patient samples

Lyophilised sample: Storage, Preparation and Analysis

Storage:

- Store unreconstituted samples at 2-8°C
- Reconstituted sample is stable for most analytes for 1 week at 2-8°C
- Reconstituted material may be frozen (once) at -20°C for long-term storage

Preparation:

Reconstitute as follows

- Allow vials to come to room temperature (RT) before use. Remove the outer cap and carefully lift the rubber stopper to prevent loss of dried material
- Accurately add the specified volume of **Reagent Grade Water**[2], preferably using a grade A volumetric pipette. The water used to reconstitute the sample should be 18 - 20°C, as the activity of the enzymes, particularly CK, is strongly affected by temperature
- Replace the stopper; invert vial carefully several times to dissolve any material adhering to the stopper, then let it stand at RT (or place on roller mixer) for ~15 minutes. Do not shake contents
- Protect from light
- Invert manually 10 times. The vial contents should now be handled as an ordinary serum sample
- Analyse freshly reconstituted material as soon as possible

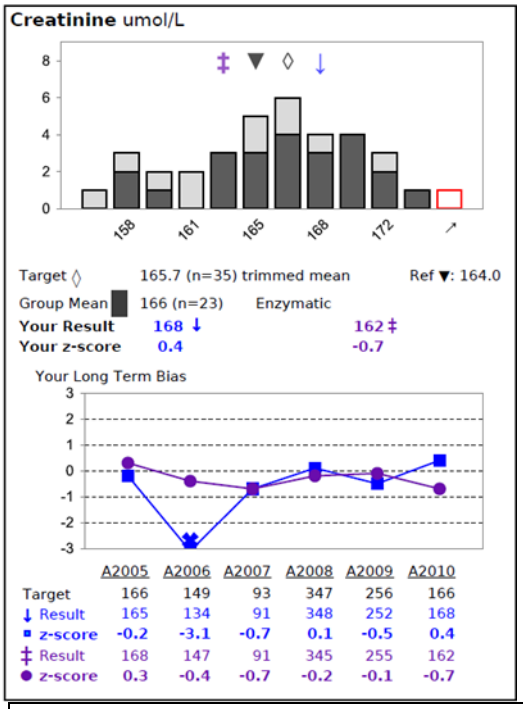
Analysis:

- Ensure the sample is at RT and mix gently before use
- Test using the procedure normally used for patient samples
- ALP and CK: test within 1-2 hours of reconstitution (may rise or fall, respectively, with time)
- Bilirubin: use light-protected sample
- Triglyceride: do not subtract free glycerol from the result

Clinical Chemistry Reports

Reports are emailed to each participant and are also stored on www.ieqas.ie
(See section 6: Result Submission and Reports: IEQAS Schemes)

Example and Explanation of Chemistry Report



↓ or ‡	Your result(s)	'Twin' systems (same analyser and methodology) are shown together
◊	Target	Value assigned for this sample: arithmetic mean of all results (trimmed to compensate for any outlying results)
▼	Ref Value	Reference method value (when available); for information
▪	Your group	Your group (most analytes are grouped by analyser; some are by method)
▪	Other results	Other analyser groups (if any)
□	Outliers	Statistical outliers (z-score ≥ ±3)
z-scores and flags		Flags indicate statistical significance and may not necessarily represent clinical significance WARNING! if your z-score is ≥ ±2 ACTION!! if your z-score is ≥ ±3
✖ or ✚	Outlier	On line graph (Your Long Term Bias), if your z-score ≥ ±3

Your Long Term Bias Plot shows z-scores for the current distribution and five previous distributions. When analysers are twinned, each is shown in a different colour to allow easy monitoring and comparison of trends in performance.

z-score explained

A z-score is generated for each results, ref: ISO 13528 (Statistical methods for use in proficiency testing by inter-laboratory comparisons). It is a measure of how close your result is to the target, e.g. a z-score of –0.5 indicates that your result is ≈0.5 SD below the target. z-scores are not cumulative.

Calculation of z-score example:

Target	≡ All-Method Mean	**165.7 umol/L**
CV*	mean CV over last 10 samples	**3.2%**
SD*	SD* = (CV* X Target) ÷ 100	(3.2 X 165.7) ÷ 100 **=5.3 umol/L**
Your result		**168 umol/L**
Difference	Result – Target	168-165.7 **= +2.3 umol/L**
z-score	Difference ÷ SD*	+2.3 ÷ 5.3 = **+0.4**

Notes:

- Scoring is less reliable where group size (n) is small but may assist with identification of quality issues. Results will not be scored if n<5.
- Where available, Reference Values or data from another EQA source will be quoted on reports.
- Reports are reviewed by the IEQAS Review Group. Additional comments may be added if deemed necessary.
- New analytes may be introduced (usually initially 'for information only' or as a 'pilot study').

Summary Report

- This report is available to registered contacts on www.ieqas.ie ➛ Download Reports ➛ Summary.
- The report shows a summary of all analyte results for which there are at least 3 analysers in a sub-group.
- IEQAS distribute minimally processed patient pools approx. three times annually. Participants are encouraged to examine the Summary reports for these samples to assess the true differences between analysers.
- Note that the Overall Mean and CV is 'robust' (ref ISO 13528) while the individual analyser group Mean and CV is 'simple'.

Example:

	Ref	Mean	%diff	CV	n	
HDL		**1.08**		**2.8**	**15**	'robust' mean/CV
Roche Modular/Cobas series		1.08	0%	3%	15	'simple' mean/CV
HDLa		**0.98**		**2.2**	**7**	
Abbott Architect		0.98	0%	2%	7	
HDLb		**1.00**		**4.3**	**7**	
Beckman AU Series		1.00	0%	4%	7	

Comparison Report

IEQAS includes an additional page on your report when an EQA sample has been used previously. This report allows labs to compare their current performance with results on the same sample from a previous distribution, thereby assessing the consistency of analyser performance over time.

Example:

Clinical Chemistry EQA Report

Sample issued 02 Nov 2020 Report 20 Nov 2020

Comparison of current sample A2011 with same sample run previously A2006

Test	Target	Result	Result previous
Albumin (BCG)	54.1	53.0	53.0
Creatinine	151	152	152
Calcium	2.78	2.81	2.84

B06 Nutgrove Enterprise Park, Rathfarnham, Dublin 14
www.ieqas.ie info@ieqas.ie P: 01 4957356

Notes for Clinical Chemistry Scheme

[1]Analyte Subgroups

Most analytes results are compared to the all method means where outlier results have been removed from the statistics. However, some analytes have been separated into two or more groups as the results differ considerably between methods/analysers, especially for commercially-prepared samples. Please review our Summary report, available for each sample distribution.

Albumin
- Bromocresol green (BCG)
- Bromocresol purple (BCP)

HDL
- Abbott Architect/Beckman Synchron
- Beckman AU
- Roche/Cobas

ALP
- Abbott Architect
- Beckman AU
- Beckman Synchron
- Roche/Cobas

AMY
- Abbott Architect CNPG3
- Beckman AU CNPG3
- Beckman AU/Synchron EPS
- Roche/Cobas EPS

LDH
- Beckman AU : Pyruvate to lactate
- All analysers: Lactate to pyruvate

[2]Reagent Grade Water

- Water used for reconstitution must be free from biological and chemical contamination:
- Purchased water must be 'Analytical Grade' ('Purified water' BP is not suitable).
- Water prepared 'in-house' should conform to the NCCLS/CAP type 1 Reagent Grade specification: Resistivity ≥10 megohm; Silicate (SiO2) ≤0.05 ppm; Bacteria ≤10 cfu/ml; filtration through activated carbon, distillation or reverse osmosis (to reduce the total organic carbon levels in the water).
- Several commercial water purification systems meet or exceed this standard.
- Simple distillation or deionization is NOT suitable.
- Do not use expired water.

Reconstitution problems

If you experience consistent bias on a number of analytes in any sample, you may have a reconstitution error. Points to check are:

1. Does your SOP for reconstitution conform to the IEQAS instructions? In particular check water temperature and whether the pipette is calibrated to deliver or to 'blow out'.
2. You may wish to check your reconstitution by weighing (on a certified balance, ideally accurate to 0.001g): After releasing the vacuum, weigh the vial + rubber stopper (W_1). Re-weigh after addition of water (W_2). W_2- W_1 should be 5.00 ± 0.03g (5.0ml reconstitution) or 3.00 ± 0.02g (3.0 ml reconstitution).

9. IEQAS HbA1c Scheme

General Details

Sample frequency: Five times per year
Sample type: Single Donor or Pooled Residual Sample
Suitability: Suitable for both Laboratory and Point of Care analysers

HbA_{1c} EQA samples

Caution

Standard precautions should be used when handling QC specimens derived from human blood to minimise the risk of potential transmission of infection.

Sample Storage and Analysis

General Information

Storage:

- Test as soon as possible after receipt. Samples may be stored at 2-8°C for the duration of the survey
- Samples are **NOT** suitable for analysis after the distribution closing date
- Surplus material may be stored at -20°C (or -70°C for longer term storage)

Preparation:

- Allow the sample equilibrate to RT and mix gently before use

Analysis:

- Analyse as for patient samples

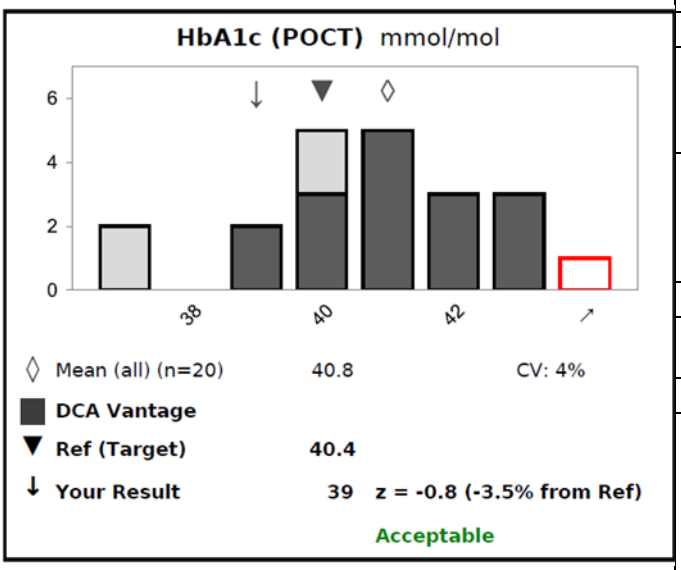
Specific Instructions for POCT users

- Check that testing strips/cartridges are within date and have been stored correctly
- Check that meter has been serviced and maintained as recommended by the supplier
- Ensure all trained operators take turns to participate in the EQA scheme
- Wear gloves and treat the sample as for a patient blood sample
- Allow sample to come to room temperature prior to testing. Mix sample well by inverting gently 5 to 6 times - ensure there are no air bubbles in the sample
- Carefully remove lid
- Sample application is important; ensure correct amount of sample is applied to strip/cartridge in a continuous flow
- Record results, date, operator details, strip lot number and analyser serial number on the Results sheet (enclosed with each sample distribution)
- Retain sample at 2-8°C for possible repeat testing; safely dispose of excess sample once report has been issued

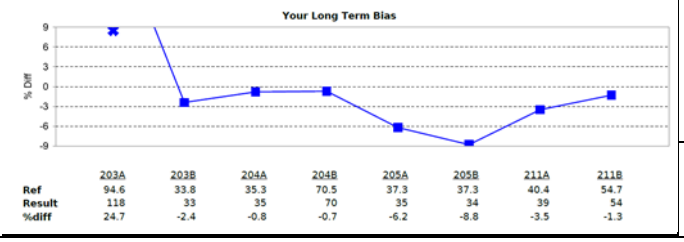
HbA1c Reports:

Reports are emailed to each participant and are also stored on www.ieqas.ie
(See section 6: Result Submission and Reports: IEQAS Schemes of this document)

Example and Explanation of HbA1c Report



Separate histogram for each sample (A and B)		
↓	Your result	
◇	Mean (Lab or POCT)	Mean of all results (trimmed to compensate for any outlying results)
▼	Ref Value Target (Lab and POCT)	European Reference Laboratory for Glycohaemoglobin (NL)
■	Your group	Your analyser group
▯	Other results	Other analyser groups (if any)
▯	Outliers	Statistical outliers
z-scores and flags	Calculated from Ref (Target)	Flags indicate statistical significance and may not necessarily represent clinical significance
	Acceptable	z-score ≤ ±2
	WARNING!	z-score ≥ ±2 ≤ ±3
	ACTION!!	z-score ≥ ±3



Long Term Bias plot:
% difference from Reference Value for current and three previous distributions of samples A and B (total of eight samples).

✖	Off-scale	Arbitrary scale ±9%

z-score explained

Each result is compared to the target value assigned by the European Reference Laboratory for Glycohaemoglobin (ERL), in the Netherlands.

A z-score is generated for each result (ref: ISO 13528 Statistical methods for use in proficiency testing by inter-laboratory comparisons). It is a measure of how close your result is to the Reference Value target, e.g. a z-score of –0.5 indicates that your result is ≈0.5 SD below the target. z-scores are not cumulative.

Calculation of z-score

Mean (all)	All method mean (trimmed) (Lab methods and POCT methods means are calculated separately)	**40.8 mmol/mol**
Ref (Target)	Reference result (ERL)	**40.4 mmol/mol**
CV*	mean CV over last 10 samples	**4.4%**
SD*	SD* = (CV* X Mean) ÷ 100	**1.80** mmol/mol
Your result		**39 mmol/mol**
Difference	Result – Ref	39 – 40.4 = -1.4 **mmol/mol**
z-score	Difference ÷ SD*	-1.4 ÷ 1.80 = **-0.8**
% diff	(Difference ÷ Ref) X 100	(-1.4 ÷ 40.4) X 100 = **-3.5%**

IEQAS Review

Reports are reviewed by the IEQAS Review Group. Additional comments may be added if deemed necessary.

Results considered as "blunders" (likely sample mix-up/transcription errors; differences exceeding 25% of the target value) are removed from the dataset before calculation of the mean and CV.

Specific Instructions for POCT users:

If result has a WARNING or ACTION flag, appropriate corrective measures should be taken. IEQAS may suggest that the POCT analyser be removed from clinical use until verification that it is functioning correctly and accurately.

It is important that poor performances are reported to your Laboratory Director/Quality Manager/ POCT Co-ordinator (as appropriate) and also, to the analyser distributor and manufacturer as soon as possible.

Please consult the Guidelines for safe and effective near-patient testing (NPT) (2021) for further details.

Assistance: If you require any assistance, please contact IEQAS.

Your own investigations should include checking:

- Clerical error (own or IEQAS)
- Correct sample tested
- Reagents in-date and stored correctly
- Retest the EQA sample
- Previous EQA performance (first occurrence?; positive/negative bias?)
- Operator training, including using EQA material (different procedure to patient sample)
- IQC performance (positive/negative bias; IQC acceptance suitable for your purpose?; IQC material in-date and stored correctly)

10. IEQAS FULL BLOOD COUNT (FBC) SCHEME

General Details

Sample frequency:	Bimonthly
Sample type:	Commercially prepared samples (human erythrocytes, simulated mammalian platelets in a plasma-like fluid). The material should be similar in appearance to fresh whole blood. In unmixed vials, the supernatant may appear pink; this is normal and does not indicate deterioration
	Or occasional fresh donor samples (separate instructions will apply)
Suitability:	Suitable for laboratory analysers
	Please contact IEQAS for POCT analyser suitability

FBC Scheme Analytes

White Cell Count (WCC)
Red Blood Cell Count (RBC)
Haemoglobin (Hb)
Haematocrit (HCT)
Mean Cell Volume (MCV)
Mean Cell Haemoglobin (MCH)
Mean Cell Haemoglobin Concentration (MCHC),
Platelets
Red Cell Diameter Width (RDW)
****
NRBC, Reticulocytes, White Cell Differential and Fluorescent Platelets (Sysmex XN) on annual fresh donor samples only
****

Some analytes are divided into subgroups. See **Analyte Subgroups**[4] for details.

FBC EQA Samples

Caution

Standard precautions should be used when handling QC specimens derived from human blood to minimise the risk of potential transmission of infection.

Sample Storage, Preparation and Analysis

Storage:

- Store samples upright at 2-8°C for duration of survey. (**Do not freeze**)

Preparation:

- Allow vials to come to room temperature before mixing
- To mix, hold the vial horizontally between the palms of the hands.
  DO NOT USE A MECHANICAL MIXER
- Roll the vial back and forth for 20 – 30 seconds; occasionally invert the vial. Mix thoroughly but **DO NOT SHAKE**
- Continue to mix in this manner until the red cells are completely suspended. Vials stored for a long period may require additional mixing
- Gently invert the vial 8 -10 times **immediately before sampling**

Analysis:

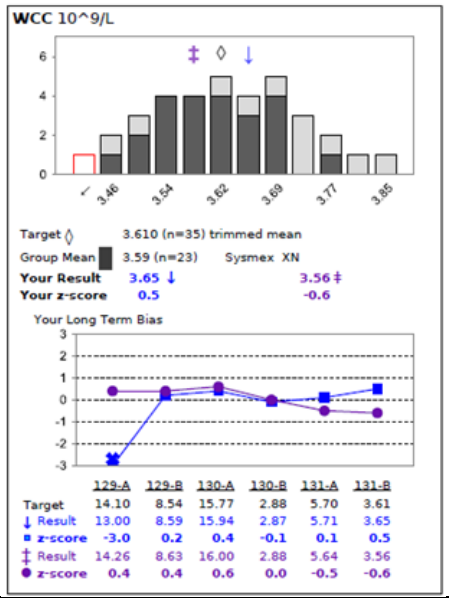
- Analyse the material as for patient samples
- Return to refrigerator (2-8 °C) within 30 minutes of use
- Opened vials are stable for at least 7 days provided they are handled and stored properly
- Sysmex XN analysers: Use QC mode for IEQAS commercially prepared samples

Note: Separate instructions will be issued for Fresh Blood Distributions

FBC Reports

Reports are emailed to each participant and are also stored on www.ieqas.ie
(See section 6: Result Submission and Reports: IEQAS Schemes)

Example and Explanation of FBC Report



↓ or ‡	Your result(s)	'Twin' systems (same analyser and methodology) are shown together
◇	Target	Value assigned for this sample: arithmetic mean of all results (calculated to compensate for any outlying results)
■	Your group	Your group (most analytes are grouped by analyser; some are by method)
■	Other results	Other analyser groups (if any)
□	Outliers	Statistical outliers (z-score ≥ ±3)
z-scores and flags		Flags indicate statistical significance and may not necessarily represent clinical significance
	WARNING!	if your z-score is ≥ ±2
	ACTION!!	if your z-score is ≥ ±3
✖ or ✚	Outlier	On line graph (Your Long Term Bias), if your z-score ≥ ±3

The **Long Term Bias** plot shows z-scores for the current distribution and two previous distributions (total of six samples). When analysers are twinned, each is shown in a different colour to allow easy monitoring and comparison of trends in performance.

z-score explained

A z-score is generated for each of your analyte results, ref: ISO 13528 (Statistical methods for use in proficiency testing by inter-laboratory comparisons). It is a measure of how close your result is to the target, e.g. a z-score of –0.5 indicates that your result is ≈0.5 SD below the target. z-scores are not cumulative.

Calculation of z-score

Target	≡ all-method mean	**3.610 x 10^9/L**
CV*	mean CV over last 10 samples	**2.30%**
SD*	SD* = (CV* X Target) ÷ 100	(2.30 X 3.610) ÷ 100 **= 0.08 x 10^9/L**
Your result		3.65 x 10^9/L
Difference	Result – Target	3.65-3.610 **= +0.04 x 10^9/L**
z-score	Difference ÷ SD*	+0.04 ÷ 0.08 = **+0.5**

Notes
- Scoring is less reliable where group size (n) is small but may assist with identification of quality issues. Results will not be scored if n<5.
- Reports are reviewed by the IEQAS Review Group. Additional comments may be added if deemed necessary.

- New analytes may be introduced (usually initially 'for information only' or as a 'pilot study').

Summary Report

- This report is available to registered contacts on www.ieqas.ie ➛ Download Reports ➛ Summary.
- There is a separate summary report for both sample A & B in each distribution
- The reports show a summary of all analyte results for which there are at least 3 analysers in a sub-group.
- IEQAS distribute minimally processed patient pools approx. three times annually. Participants are encouraged to examine the Summary reports for these samples to assess the true differences between analysers.

Note that the Overall Mean and CV is a 'robust' CV (ref ISO 13528) while the CV for an individual analyser is a 'simple' CV.

Example

	Ref Mean	%diff	CV	n	
Hb	**7.6**		**1.4**	**39**	'robust' mean/CV
Cell Dyn Ruby	7.8	3%	2%	4	'simple' mean/CV
Sysmex XN	7.6	-0%	1%	33	

Notes for FBC Scheme:

[4]Analyte Subgroups:

Some analytes have been separated into two or more groups as the results differ considerably between methods/analysers:

HCT
- Sysmex XN/XE
- Cell Dyn Ruby

MCV
- Sysmex XN/XE
- Cell Dyn Ruby

MCHC
- Sysmex XN/XE
- Cell Dyn Ruby

Platelets
- Platelets: Cell Dyn Ruby
- Platelets-IMP: Sysmex XN/XE (Impedance)
- Platelett-OPT: Sysmex XN/XE (Optical)

RDW
- Cell Dyn Ruby
- Sysmex XN/XE

11. IEQAS BLOOD CELL MORPHOLOGY (BCM) SCHEME

General Details

Sample frequency: Bimonthly

Sample type: A blood film is supplied, stained and cover slipped. Cases are carefully selected by our experts and clinical details are supplied with the slide. The IEQAS Blood Cell Morphology scheme is primarily educational, with no laboratory scoring, but with individual comments and advice as appropriate.
Slides are reviewed at the IEQAS Conference.

BCM EQA Samples

Caution

Standard precautions should be used when handling QC specimens derived from human blood to minimise the risk of potential transmission of infection.

Storage and Preparation

Storage:

- Samples may be stored at room temperature

Preparation:

- The sample is supplied stained and coverslipped

Analysis:

- Clinical details are supplied with the slide

Analysis and Reporting of Results

Please examine the slide and report

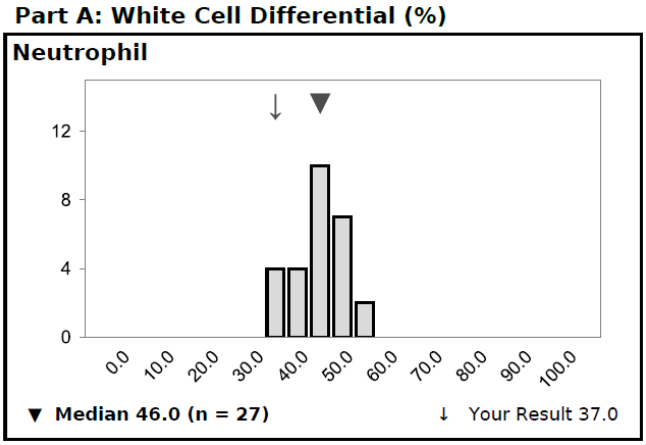
- White Cell manual differential
  - reported as percentage; please ensure counts total 100%
  - NRBC count should not be included in the White Cell Differential and should be reported per 100 WBC
- The most significant morphology features (**maximum of 5**)
- A general film comment with overall finding may be reported in the comment box
- Participants are encouraged to include a diagnosis, where possible

BCM Reports

Reports are emailed to each participant and are also stored on www.ieqas.ie
(See section 6: Result Submission and Reports: IEQAS Schemes)

Example and Explanation of BCM Reports

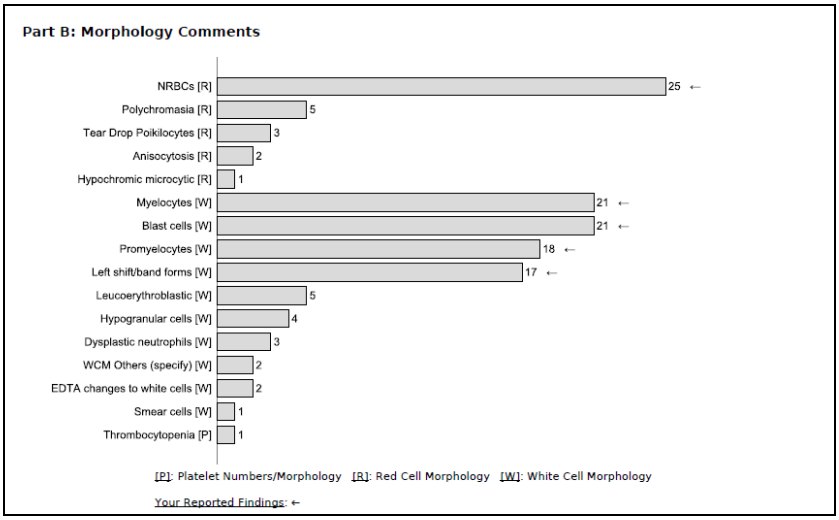
Part A



White Cell Manual Differential

Each parameter is reported as a histogram of all results; this example shows the neutrophil report with the median (▼) and your result (↓) identified.

Part B



Most significant morphology features:

A bar chart of morphological findings by participants is generated. For example, in this report, 28 laboratories reported Polychromasia, as did this laboratory (indicated by ←).

Index
← = Your reported findings
[R] = Red Cell
[W] = White Cell
[P] = Platelet

B06 Nutgrove Enterprise Park, Rathfarnham, Dublin 14
www.ieqas.ie info@ieqas.ie P: 01 4957356

General Comments to all labs:

Clinical Details: as supplied with the film

Diagnosis: patient diagnosis

Additional Comments: general comments to all participants to include a detailed description of cells seen and how they relate to the differential diagnosis

Review Group comments to your lab: specific comments may be added for your laboratory

Slides from each BCM case will be reviewed at the IEQAS Annual Conference.