

# Global efforts in Quality improvement : what does it mean for EQA?

Annette Thomas  
Chair IFCC C-AQ

# Who is IFCC C-AQ?

Our members:

The IFCC C-AQ is part of the Education and Management Division (EMD) of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC).

Each full member society can also nominate a corresponding member. Details are available on the IFCC website.

Name	Position	Country	Term	Time in Office
A. Thomas	Chair	UK	1st	2017 01 - 2019 12
D. Grenache	Member	US	2nd	2016 01 - 2018 12
A. Haliassos	Member	GR	2nd	2017 01 - 2019 12
Q. Meng	Member	CA	1st	2016 04 - 2018 12
L.Khorovskaya	Member	RU	1st	2017-01 - 2019 12

# What do we do?

The Committee's remit is to promote the education and training of laboratory professionals on international standards and practices relating to the analytical quality in clinical laboratories.

Its remit is extensive and covers: methods and instrument validation, traceability, measurement uncertainty, internal quality control, external quality assessment and pre-analytical & post-analytical concepts

Its main focus is to address the educational and training needs of **emerging nations in this area**, delivered through: guidance documents and publications, online presentations, workshops and seminars, invited lectures and consultation and advice.

# What are we currently working on?

Recent activities include:

- Maintain Directory of National EQA providers with contacts and repertoire.
- Review and update previous IFCC and C-AQ guidance documents in this field to ensure their current and future relevance.
- Developing knowledge resources, presentations, e-learning for eAcademy.
- Develop Quality Ladder monographs.
- To conduct at least one C-AQ workshop upon request.
- Facilitate Working Group to develop guidance on Moving averages.

# Directory of National EQA providers

[PTDB](#) [Home](#) [Providers Database](#) [Register Provider](#) [About](#) [Contact](#) [Login](#) [Register](#)

## Welcome

Consult and search the PT Providers database

The PTDB Website is the online IFCC Database of PT/EQA Programs in Laboratory Medicine.

This DataBase of Proficiency Testing – External Quality Assurance Programs in Laboratory Medicine it is a "Market Place" for the introduction of international proficiency testing schemes for uncommon but clinically important analytes.

It is developed by the [Committee on Proficiency Testing \(C-PT\)](#).

The database of PT/EQA providers is maintained in collaboration with the IFCC [Committee on Analytical Quality \(C-AQ\)](#).

[Read more about this project](#)

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## Aims of the Committee on Proficiency Testing (C-PT)

Our aims are:

- To facilitate the introduction of international proficiency testing schemes for uncommon but clinically important measurands.
- To use the information to select measurands that may be suitable for method harmonization as a means to improving patient outcomes.

[Read more about Committee on Proficiency Testing at the IFCC website.](#)


[Read more about The International Federation of Clinical Chemistry and Laboratory Medicine \(IFCC\)](#)



**IFCC**  
International Federation  
of Clinical Chemistry  
and Laboratory Medicine

### Contact details

Do you need more details about this project or have questions?



You are more than welcome to contact Dr. Alexander Halliassos by email.

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# Directory of National EQA providers

PTDB

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Contact

Login

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## Providers

A short summary

General search

Advanced search

Show 10 entries

EQA	Organising Body
ACBI-CMCQAP	ACBI-CMC Vellore EQAS Programs
ANSM - Czech Republic	ANSM
ANSM - France	ANSM
AUSTOX Urine Toxicology Proficiency Program	PaLMS
BEQAS	Bulgarian Society for Quality Assurance in Medical Laboratory
Blue Belt	Quality System Consulting SA de CV
Bolivia	N/A
CECC	Standarization and Quality Control Committee
CECC	Standarization and Quality Control Committee
CRB	Centro di Ricerca Biomedica per la Qualità in Medicina di Laboratorio - Azienda Ospedaliera Università di Padova

Showing 1 to 10 of 67 entries

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Show 10 entries

EQA	Organising Body	Country
UKNEQAS	UKNEQAS	United Kingdom
WEQAS	Cardiff and Vale University Health Board operating as WEQAS	United Kingdom

Showing 1 to 2 of 2 entries

Search by country or specialty

Details about WEQAS

Organizing Body

Cardiff and Vale University Health Board operating as WEQAS

Country

United Kingdom

Website

<http://www.weqas.com>

Email

[office@weqas.com](mailto:office@weqas.com)

Last modified

05-11-2016

✓

Open to International Participants

✗

Anatomical Pathology

✓

Clinical Chemistry

✗

Cytopathology

✓

Haematology

✗

Immunology

✓

Microbiology

✗

Molecular Pathology

✓

PoCT

✗

Serology

✗

Transfusion

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# Resource table : most are hyperlinked

Resource table of relevant quality related documents (C-AQ)

	Pre- and post-analytical	Internal quality control	External quality assessment
<b>Standards</b>	ISO 15189	ISO 15189	ISO 17043 Guidelines EQAP 3
<b>Recommendations</b>	IFCC Part 1 CLSI H03-A6 venipuncture NCCLS H18-A3 Bk IFCC ref valPart1- CLSI C28-A3 ref i	Büttner J, Broth R, Broughton PM, Bowyer RC. International federation of clinical chemistry. Committee on standards. Expert panel on	Fundamentals

	Documents	Pre- and post-analytical	Internal quality control	External quality assessment
		AACB checklist	AACB checklist	
		EFLM		
	<b>Publications</b>	<p>Plebani M, Astion ML, Barth JH, Chen W, de Oliveira Galoro CA, Escuer MJ, Ivanov A, Miller WG, Petinos P, Sciacovelli L, Shcolnik W, Simundic AM, Sumarac Z. Harmonization of quality indicators in laboratory medicine. A preliminary consensus. Clin Chem Lab Med. 2014 Jul; 52(7):951-8</p> <p>Plebani M, Sciacovelli L, Aita A, Chiozza ML. Harmonization of pre-analytical quality indicators. Biochem Med (Zagreb). 2014 Feb 15; 24(1):105-13.</p> <p>Lippi G, Becan-McBride K, Behúlová D, Bowen RA, Church S, Delanghe J, Grankvist K, Kitchen S, Nybo M, Nauck M, Nikolac N, Palicka V, Plebani M, Sandberg S, Simundic AM. Preanalytical quality improvement: in quality we trust. Clin Chem Lab Med. 2013 Jan; 51(1):229-41</p> <p>Plebani M, Quality Indicators to Detect Pre-Analytical Errors in Laboratory Testing Clin Biochem Rev. 2012 August; 33(3): 85-88</p>	<p>Kinns H, Pitkin S, Housley D, Freedman E Internal quality control: best practice. J Clin Pathol. 2013 Dec;66(12):1027-32</p> <p>Westgard JO. Statistical quality control procedures. Clin Lab Med. 2013 Mar; 33(1):111-24</p> <p>Westgard JO. Internal quality control: pl and implementation strategies. Ann Clin Biochem. 2003 Nov; 40(Pt 6):5</p> <p>Petersen PH, Ricós C, Stöckl D, Libeer JC, Baadenhuijsen H, Fraser C, Thienpont L. Proposed guidelines for the internal quality control of analytical results in the medical laboratory. Eur J Clin Chem Clin Biochem. 1996 Dec; 34(12):983-99.</p>	

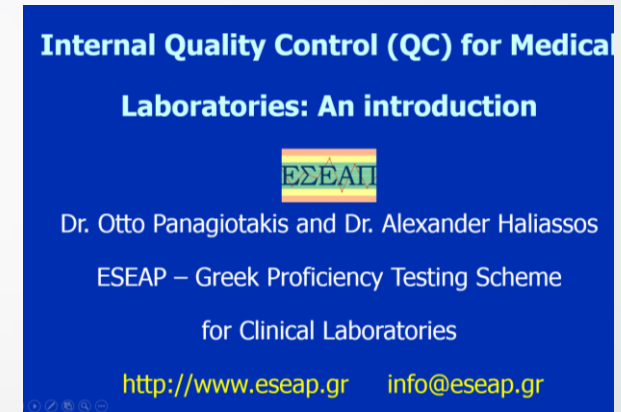
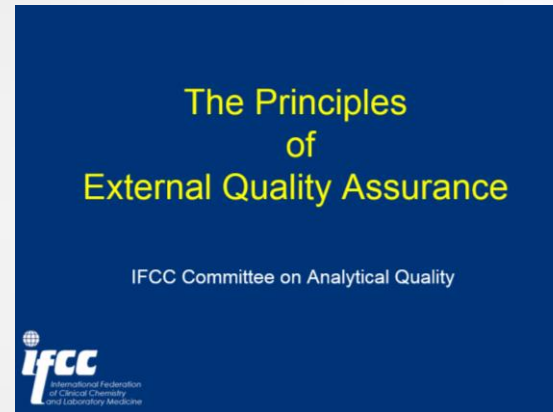
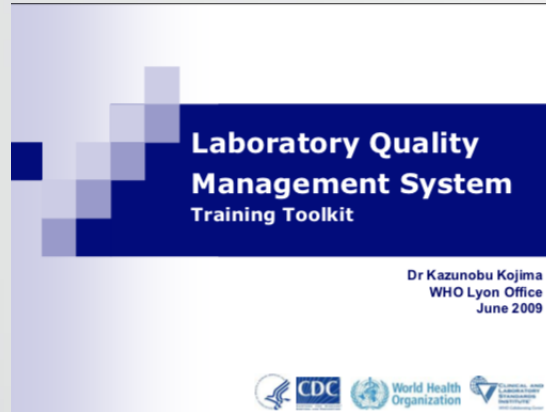
	Pre- and post-analytical	Internal quality control	External quality assessment
			<p>Characterisation and evaluation of external quality assessment scheme serum. Discussion paper from the European External Quality Assessment (EQA) Organisers Working Group C. Middle JG, Libeer JC, Malakhov V, Penttilä I. Clin Chem Lab Med. 1998 Feb; 36(2):119-30</p> <p>External quality assessment of clinical laboratories in the United Kingdom. Whitehead TP, Woodford FP. J Clin Pathol. 1981 Sep; 34(9):947-57.</p>
<b>Educational materials</b>	<p>Quality of Management &amp; Quality of Analysis. A Handbook for developing Countries</p> <p>EQAP Version 3 (document on competence)</p> <p><a href="http://www.ifcc.org/ifcc-education-division/emd-committees/c-aq/c-aq-publications-and-resources/">http://www.ifcc.org/ifcc-education-division/emd-committees/c-aq/c-aq-publications-and-resources/</a></p>	<p>Quality of Management &amp; Quality of Analysis. A Handbook for developing Countries</p>	<p>Procedure for planning an EQA Scheme</p> <p>Fundamentals for External Quality Assessment (EQA)</p> <p>EQA set up checklist</p> <p>Directory of EQA Services</p>
<b>Presentations</b>	<p><a href="http://www.ifcc.org/ifcc-education-division/emd-committees/c-aq/c-aq-publications-and-resources/">http://www.ifcc.org/ifcc-education-division/emd-committees/c-aq/c-aq-publications-and-resources/</a></p>	<p>Internal Quality Control (QC) for Medical Laboratories: An Introduction</p>	<p>The Principles of External Quality Assurance</p>
<b>Other Links</b>	<p><a href="https://www.westgard.com/pre-and-post-analytical-quality.htm">https://www.westgard.com/pre-and-post-analytical-quality.htm</a></p> <p><a href="http://www.who.int">http://www.who.int</a></p>	<p><a href="http://www.westgard.com/lessons-basic-qc-practices.htm">http://www.westgard.com/lessons-basic-qc-practices.htm</a></p> <p><a href="http://www.who.int">http://www.who.int</a></p>	<p><a href="http://www.ieqas.org.uk/">http://www.ieqas.org.uk/</a></p> <p><a href="http://www.eqalm.org/">http://www.eqalm.org/</a></p> <p><a href="http://www.who.int">http://www.who.int</a></p>
<b>Course materials</b>	<a href="http://www.ifcc.org/ifcc-education-division/webinars/">http://www.ifcc.org/ifcc-education-division/webinars/</a>	<a href="http://www.ifcc.org/ifcc-education-division/webinars/">http://www.ifcc.org/ifcc-education-division/webinars/</a>	<a href="http://www.ifcc.org/ifcc-education-division/webinars/">http://www.ifcc.org/ifcc-education-division/webinars/</a>

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# Developing presentations, e-Academy resources



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# Developing Monographs – the Quality Ladder

- Background information: Based on the feedback from the workshop held in S. Africa in February 2017 on Quality and Markers for Diabetes for developing countries it was identified that existing resources on quality available from the IFCC website such as Quality of Management and Quality of Analysis were not used by the attendees. It was identified that “bite size” educational material such as the EQA checklist and quality outline presented at the meeting would be more suitable.
- Plan for 2018: Develop a series of monographs covering the basic concepts of Quality that can be used by developing countries.
- Update: A scoping document has been developed, topics agreed and content / authors identified from the presentations already received. From meeting in August it was agreed to stratify the topic areas to Basic, Intermediate and Advanced.

# Laboratory medicine: quality ladder -1

## External Quality Assessment

What is the role of External Quality Assessment?

What are the different types of EQA?  
Examples ,including educational Schemes ,  
Individual Laboratory performance -  
assessing imprecision, trueness.

Method performance - Assessing trueness,  
traceability inter laboratory imprecision.

Types of statistical analysis used in EQA.

Matrix issues - stability and commutability.

## IQC

What is IQC?

When should it be used and how  
frequently?

What sort of Internal Quality control  
designs are there? Useful graphs and  
trend analysis.

What rules can you use?

## Analytical Quality

What is bias, imprecision, uncertainty,  
traceability?

How to verify your equipment and  
methods?

Selecting performance specification



# Laboratory medicine: quality ladder - 2

**Pre-Analytical - right test, right patient, right sample, right time**

What are pre analytical errors?

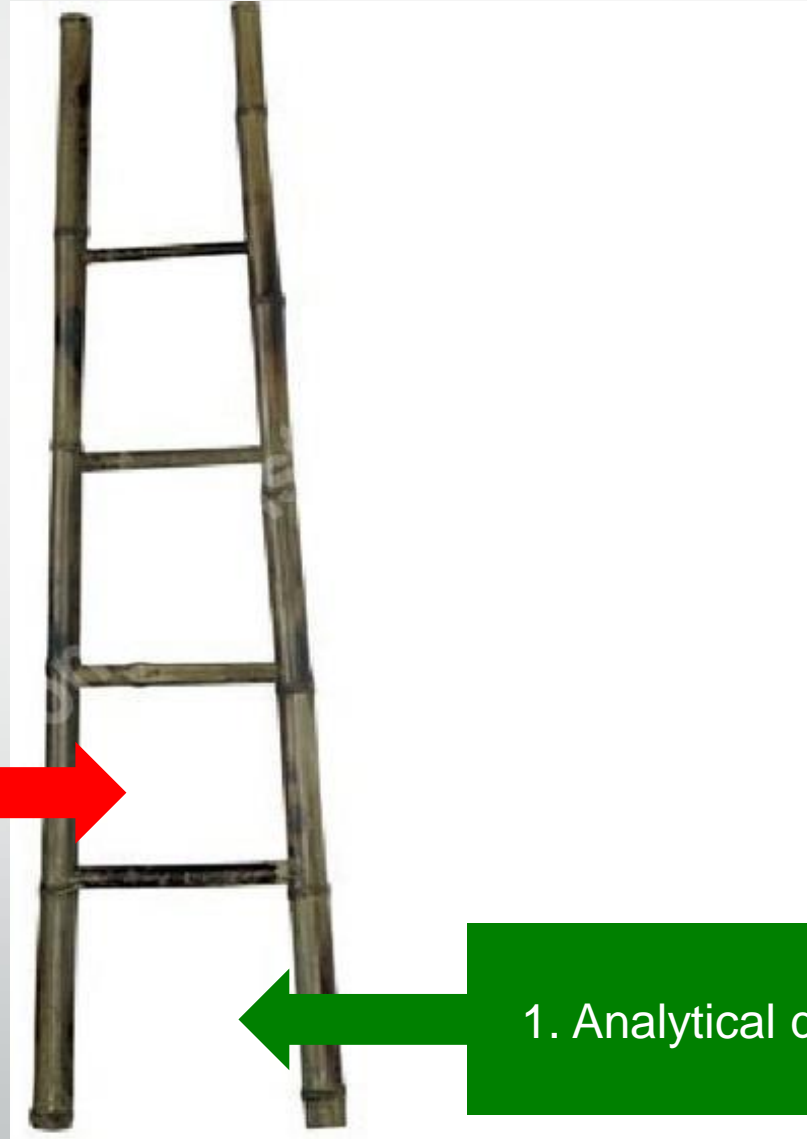
How can you influence and prevent pre-analytical errors such as sampling errors, mislabelling, misinformation, incorrect units, transport, temperature etc?

How do we check for these factors?

What Risk Management Tools are there to identify error rates?

2. Pre-analytical  
quality

1. Analytical quality



# Laboratory medicine: quality ladder 3 &4

Quality Management
Personnel structure – Training requirement.
How to assess competence?
QMS – What does it look like?
Quality Manager
Document Control / Process Control
Audit / Non-conformity / Quality improvement

4. Quality  
management /  
lab accreditation

Post-Analytical
Test validation
Auto/ Manual reports – comments?
Critical values – do you telephone?
Interpretation - reference values
Report receipt
Follow up – further tests

3. Post-analytical  
quality

2. Pre-analytical  
quality

1. Analytical quality



# What are we currently working on?

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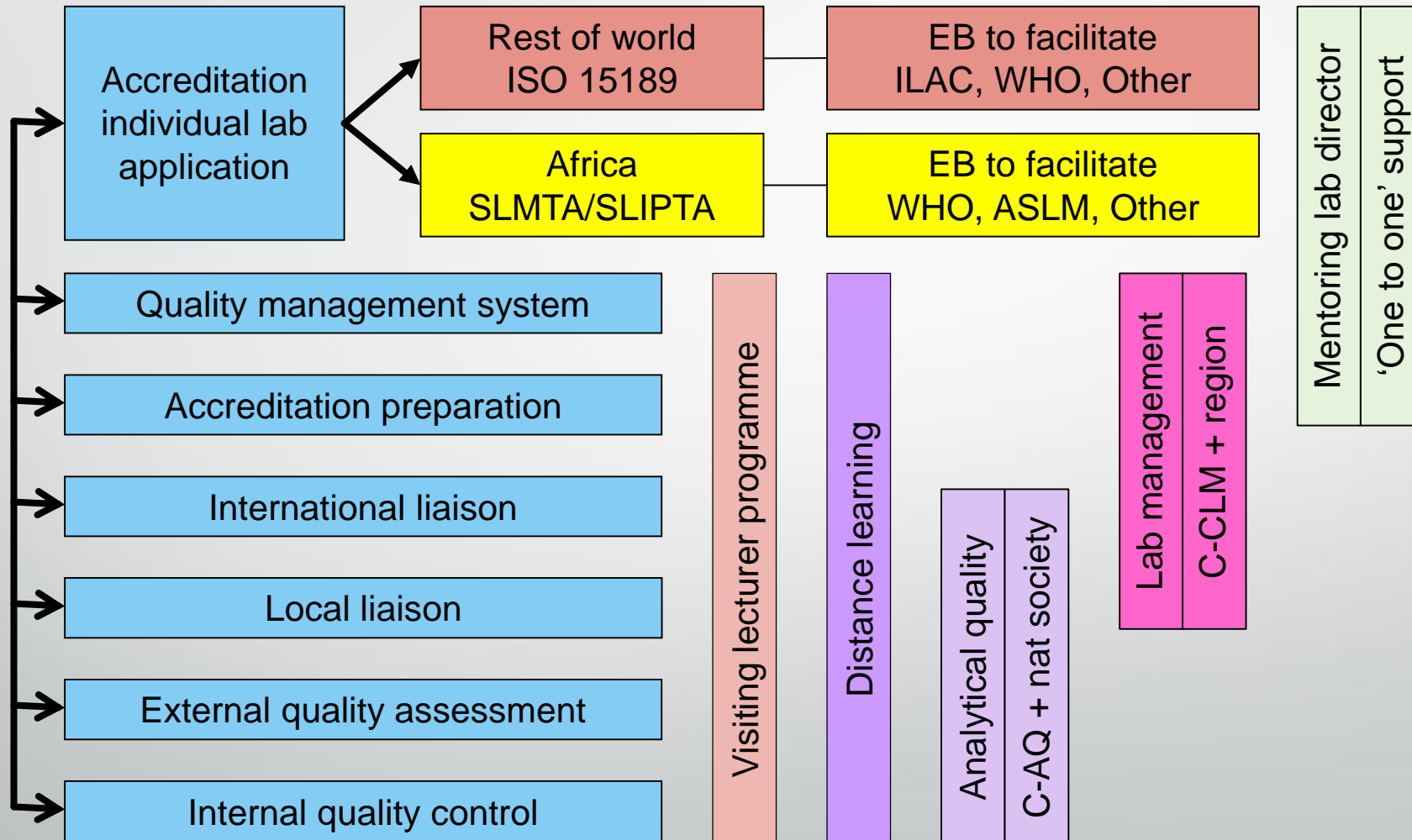
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# Who is the IFCC Committee on Developing Quality Competence in Medical Laboratories (DQCML) ?

- The C-AQ Committee works closely with DQML
- DQML suggest and provide lecturers for countries that have requested assistance. Recent examples include organisation of workshops and laboratory visits in Malawi and Nepal.

Name	Position	Country	Term	Time in Office
E.Amann	Chair	DE	1st	2017 01 - 2019 12
J.Smith	Corresponding Member	UK		
R.Greaves	Corresponding Member	AU		
V.Daka	Corresponding Member	ZM		

# DQCML: the full programme





## IFCC Developing Quality Competence in Medical Laboratories (DQCML)

Visit to Malawi: February 26 – March 1, 2018

Egon Amann  
Graham Beastall  
Annette Thomas



# The Malawi visit



At the end of February 2018, we attended a visit to Malawi, holding two workshops, one in Blantyre and one in Lilongwe, and undertook 6 laboratory visits.

Aim: improving the knowledge and understanding of quality processes and practice and providing assistance in designing EQA schemes for all tests being performed in Malawi.

## What did we learn?

EQA is undertaken nationally only for Malaria, HIV and TB.  
Workshop 1

Group 1	Group 2	Group 3	Group 4
Quality monitoring inadequate	Insufficient inventory management	Internal quality control not always correctly applied	Knowledge gap from policy makers to labs workers
Too intensive Governmental control of labs	Documentation and document control	EQA materials supply logistics inadequate	Insufficient supply of reagents and QC
Missing freedom to act	Equipment maintenance not done properly	Trained staff have high workload and must do everything	Too ambitious government body plans – reality miss
Even National Labs not being accredited	EQA National labs: not trustworthy	No CAPA system in place	No real interest and push for EQA from government
Insufficient training of personnel		Missing instrument maintenance & servicing	Bad commitment from lab staff / no reward system

## Workshop 2

Group 1	Group 2	Group 3
EQA is expensive.	Lack of commitment of staff. No sharing of QMS.	Some facilities not enrolled in EQA or SLIPTA.
It takes 3 to 4 months to get the reports.	Instrument service contracts not available. Engineer takes time to respond.	QC not consistently provided. Expiry date a problem.
Power outages! Can't store reagents; can't do tests!	QC and tests not available in EQA so don't know our performance.	Stock out is an issue.
Reagents aren't available. Therefore:	Frequently reagent stock unavailable.	Reagents from suppliers not good
IQC with short shelf live. Expiry next week.	Lab dept. not being recognized by Hospital Management.	SOPs not followed esp. outside lab.
	Poor lab infrastructure.	Attitude of staff.

# The Malawi visit

Visit to Zomba District Hospital Laboratory



Visit to Balaka District Hospital Laboratory



Visit to Dedza District Hospital Laboratory



Visit to Machinga City Hospital Laboratory



Visit to Ntcheu District Hospital Laboratory



Visit to Partners in Hope Medical Center Laboratory in Lilongwe (Private Laboratory)



# What did we achieve?

The main outcome from the visit was to develop a strategic plan:

- ✓ to establish an EQA technical Working Group to inform all laboratories of the direction of travel,
- ✓ further raise awareness of EQA through workshops, the National professional body to influence the education curriculum by highlighting IQC, EQA and risk management tools and
- ✓ to develop programs to enable labs to “move up the Quality ladder” through SLIPTA, SLMTA schemes.



## IFCC Developing Quality Competence in Medical Laboratories (DQCML)

Visit to Nepal: May 28 – 30, 2018

Egon Amann  
Renze Bais  
Annette Thomas



# The Nepal visit



Quality Assurance Workshop day 1 delegates



EQA Workshop day 2 delegates

Following a request of assistance from Nepal to establish a national EQA programme, in May 2018, a similar visit was arranged with a 2 day workshop and 7 site visits. The visit focused primarily on how to implement a National EQA programme.

Samyak Diagnostic Pvt.Ltd



Samyak Diagnostic Pvt. Ltd.  
Nepal's First ISO 15189:2012 Certified Pathology Laboratory

←

**SAMPLE TEST MENU**

Sn.	TEST NAME	Price*
1.	Fasting Blood Sugar	90/-
2.	Blood Urea	220/-
3.	Creatinine	200/-
4.	Alkaline Phosphatase (ALP)	220/-
5.	Lipid Profile	850/-
6.	Uric Acid	170/-
7.	Routine Urine	150/-
8.	Thyroid Function Test	1200/-
9.	Beta HCG	1100/-
10.	Vitamin D	2600/-
11.	Vitamin B12	1600/-
12.	CBC	500/-
13.	HbA1c (HPLC Method)	800/-
14.	SGPT	220/-
15.	SGOT	220/-

\* Price inclusive of Tax (VAT)

Nepal Cleft and Burn Center,  
Pushpalal



Kathmandu Model Hospital,  
Bhrikutimandap



## Laboratory visits

1. Nepal National Hospital, Kalanki, Kathmandu
2. Nepal Cleft and Burn Center, Pushpalal Medical College & Teaching Hospital (pheet Nepal), Kirtipur, Kathmandu
3. Samyak Diagnostic Pvt.Ltd (private lab – Nepal's first ISO 15189:2012 Certified Pathology Laboratory
4. Patan Private Hospital – Clinical Laboratory
5. Kathmandu Model Hospital, Bhrikutimandap, Kathmandu
6. Tribhuvan University Teaching Hospital – Institute of Medicine – Maharajgunj Medical Campus
7. Shahid Gangalal National Heart Center, Basbarai, Kathmandu.

The following is a summary of most burning issues presented by the eight groups:

Group 1	Group 2	Group 3	Group 4
Establishment of Quality System by government.	Need compulsory policy on IQC / EQA participation.	Lack of trained manpower (don't have enough knowledge on QC!).	Difficulty of interpreting control values, differences between analyzers.
QC materials must not be expensive.	High cost for Quality Management. High cost for QC and EQA. Competition of price vs. quality.	Finance is always an issue! Everything is expensive, e.g., training. Not given sufficient wages.	Lack of reagents, storage. Short supply of reagents and low quality.
Sample transportation act needs monitoring by government.	No Government policy regarding sample, reagent, and transportation.	Lack of reliable, regular and effective monitoring system.	Lack of training regarding quality control.
Good policy on biohazard issues, waste products, how to dispose required.	Lack of Practical implication of corrective actions when e.g., EQA fails.		
Commission to the medical doctors is a big challenge.	Lack of practical training on CAPA.		

What were the issues?

Group 5	Group 6	Group 7	Group 8
Training in pre-analytical phase not available. Involves non-technical personnel with no training.	Practice based on commission system rather than quality system.	Corrective action not followed. Qualified and trained human resource missing.	Pre analytical sample prep is problematic.
Use old equipment not calibrated.	Lack of lab work harmonization, e.g. sample tracking system, inadequate acquisition forms, infrequent availability of EQA samples,	Instrument and reagent, calibration, validation and certification inadequate.	Post analytical – waste disposal and interpretation.
Lack of waste management.	Unskilled personnel working in clinical labs, lack of audit.	Lack of government policy on QC implementation.	Lack of moral values amongst practicing clinicians, lack of manpower.
Lack of understanding of ISO standards	High turnover of staff due to poor environmental working conditions and low wages.		Implementation of quality control act. Financial cost high. Address policy maker.
Handling of specimen. Training limited to professionals only.	Lack of recognition of profession.		



# What did we achieve?

- Knowledge exchange – all sessions interactive
- Subsequently, a pilot in Clinical Chemistry and HbA<sub>1c</sub> for 20 laboratories was recently established thanks to the generosity of Dr. Tony Badrick, CEO of the Royal College of Pathologists of Australasia (RCPA) EQA programme in providing the samples and Dr Renze Bais in providing the software.

# How could EQALM members help?

- As the resource limited counties move up the Quality ladder, EQA provides the essential tools to help inform strategy and monitor progress. I anticipate there will be an increasing requirement to provide more and more assistance to establish these National EQA programmes in the foreseeable future. EQALM has a wealth of expertise and knowledge within its membership and I would urge all of you to help shape the global effort to improve quality and get involved in this incredibly rewarding experience.



# How could EQALM members help?

- Provide EQA material (time expired?)
- Knowledge exchange – Observe and learn
- Educational material for our Quality Ladder
- Discipline specific resource for e-Academy

Thank you