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International EQA Training - Part 2

In 1996 (now 23 years ago!) CMPT received a request from the Thailand Department of Medical Science to assist in the development of a proficiency testing program for drinking water testing laboratories. At that time, two officials from Bangkok visited CMPT for two weeks during which we showed them how to make and distribute samples and gave them some basic guiding in informatics management.

We have long since lost contact with the group, which is a shame as it would be both interesting and relevant for us to know if their experience here in Vancouver had any long-standing results.

With that experience in hand, CMPT has repeated the training with a several countries including China, Zimbabwe, South Africa, United Arab Emirates, Turkey, Belgium, Kenya and others, inviting people to visit CMPT and UBC to learn hands on how to make samples.

It is fair to say that we have had more successes than failures, but the problems that we observed with the different teams were usually the same. While we see our laboratory as “just” CMPT, it is in fact equipped with well adapted instruments and procedures, and has a very sophisticated laboratory quality management system. This doesn't necessarily reflect the visiting laboratories' situation.

So working with Oneworld Accuracy (1WA), another international EQA program headquartered in Vancouver, we came up with another idea. Rather than having laboratories send delegates here, we would reverse the process so that we would help them set up an EQA laboratory in their own country, with the resources available to them.

Figure 1. Dr. Jean Frederic Flandin (first left) with the Ethiopian team

In the last months, we have tried this approach in two African countries: Nigeria and Ethiopia, two countries in Africa with the greatest population.

We reported about our trip to Nigeria in the last issue of our newsletter Connections.

Our most recent training (April 2019) was in the Ethiopian Public Health Institute (EPHI) in Addis Ababa. EPHI has been established in a former Pasteur Institute facility that is about 100 years old, but has been modernized and is indeed a very comfortable, modern, well equipped and has a very well serviced laboratory that serves as the National Microbiology Reference Laboratory (including genomics and tuberculosis), and as the Center for Proficiency Testing.

The collaboration with 1WA came together really nicely with CMPT being responsible for helping them with technical skills and 1WA for helping them with the reporting as 1WA has a very sophisticated informatics system already in use in Ethiopia.

Together with Dr. Jean Frederic Flandin from 1WA we were able to provide a solid foundation in EQA sample production making. In barely 5 days they were able to learn the principles and ac-



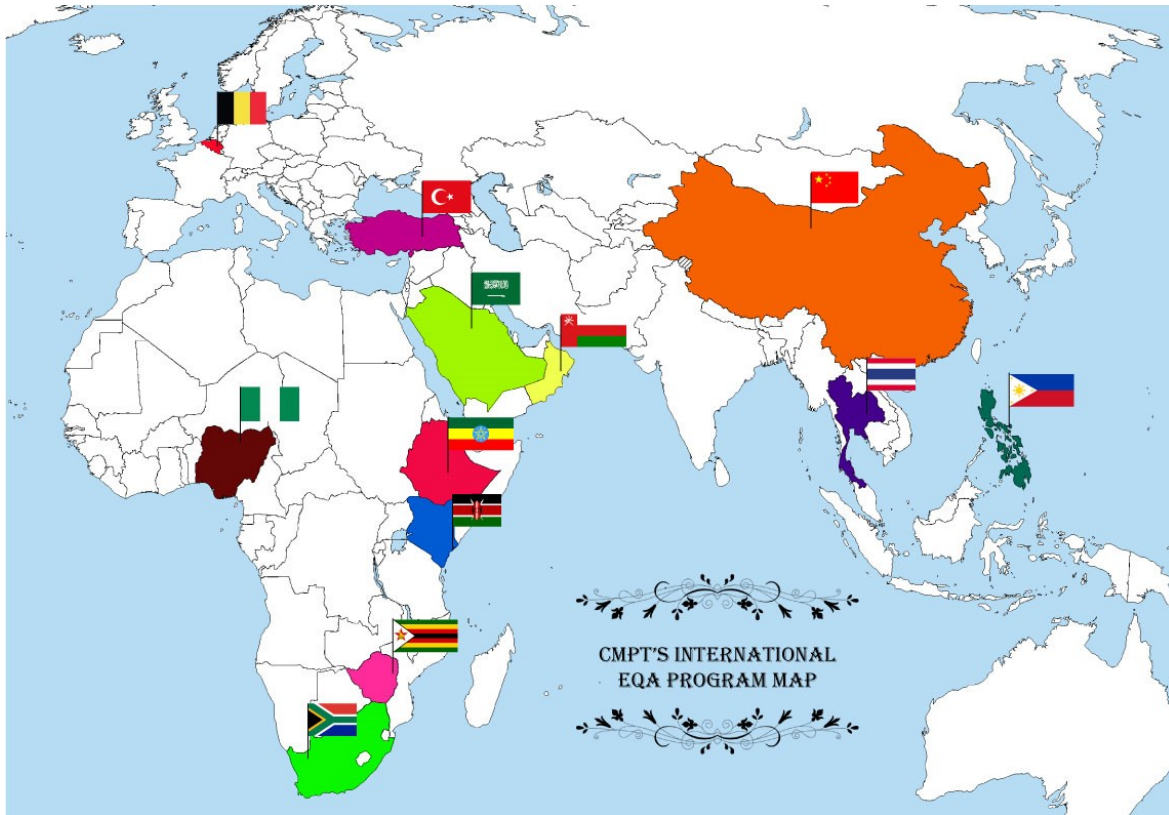
INTERNATIONAL EQA TRAINING

quire experience in making simulated samples for urine, wound swabs, sputum, feces, and Gram stains, and they were able to develop a sound grasp of quality control, standard operating procedures, homogeneity, and stability studies.

Pretty good for a week!

There is still lots of work to do, but from our combined experience, it was pretty clear that with the right conditions, a good laboratory, and able staff with a sense of commitment, on-site training can be an excellent opportunity for training.

We look forward to continuing on working with 1WA in this new form of support and provision for laboratory quality in developing countries.



CMPT has been involved in EQA International training in Belgium, Nigeria, South Africa, Zimbabwe, Kenya, Ethiopia, South Arabia, Oman, Turkey, China, Thailand, and the Philippines.

NEWS

Data Entry System

Our new **Data Entry System** is in full use now; all programs have changed to reporting with the new member's portal.

Video tutorials are available on general reporting and Clinical Bacteriology reporting.

Check them out at: <https://member.cmpt.ca/video-tutorials/>

Remember to **login** to access the site



KEEPING UP WITH THE TAXONOMY

Keeping up with the changes in taxonomy

The introduction of genome sequencing and other molecular techniques has been increasingly used to determine phylogenetic relatedness of microorganisms. This has led to an explosion of novel microbial taxonomy.

Prior classification criteria such as phenotypic characteristics have demonstrated to be insufficient and sometimes misleading when classifying organisms within different families, genera, or species.

Although the clinical utility of many of the new taxonomy revisions remain to be seen, the accurate identification of organisms is important in the understanding of pathogenesis and epidemiology of infections and it can have an impact on the antibiotic susceptibility testing and data interpretation.

Trying to keep up with all these changes can be a daunting experience for the microbiology laboratory; on the other hand, it is important that the laboratory remains current and clinically relevant.

In 2013, CMPT sent a Paper Challenge on this topic, to discuss the proper procedure for the laboratory to incorporate new nomenclature into their reporting practices.

The discussion mentioned that for some clinicians, the microbial terminology that they are familiar with is the terminology they prefer, while for others, the new terminology, once established in literature, becomes their first choice so the clinical laboratory needs to meet the needs of both groups.

In an opinion expressed within the Manual of Clinical Microbiology (American Society for Microbiology), the preferred alternative is to present both the old and the new name within the same report for some period, or at least until the path forward becomes clear.

"When laboratories adopt taxonomic changes, the older epithet should be included in parentheses following the new name for a minimum of 6 months. For infrequently encountered pathogenic organisms, 6 months may be insufficient for physicians to become familiar with the taxonomic change. It is the laboratory's responsibility to ensure that clinicians are aware of the significance of the organism being reported in these cases."

At some point it may be that the new name has become so well established in both literature and clinical practice, that using two names is no longer necessary or appropriate. Perhaps the most problematic outcome is when different laboratories in a geographic region make differing decisions, with some laboratories adapting change and others electing to not.

Responding to an increasing need to summarize new clinically important organisms and changes in the nomenclature and classification of known organisms, the Journal of Clinical Microbiology has committed to write updates every two years on these changes.



The first series of minireviews were published in January 2017 and the second were published in February 2019.

Below, we summarize some of the changes that affect commonly seen organisms in the clinical microbiology laboratory. For more comprehensive lists and newly described organisms please check the references.

BACTERIA

One of the most significant changes has been the reorganization of families and genera within what is now known as *Enterobacteriales*. In brief, the *Enterobacteriaceae* family has been divided into seven families:

Erwiniaceae – containing the genera *Erwinia*, *Buchnera*, *Pantoea*, *Phaseolibacter*, *Tatumella*, and *Wigglesworthia*.

Pectobacteriaceae: containing the genera *Pectobacterium*, *Brenneria*, *Dickeya*, *Lonsdalea*, and *Sodalis*

Yersiniaceae: containing the genera *Yersinia*, *Chania*, *Ewingella*, *Tahnella*, *Rouxiella*, *Samsonia*, and *Serratia*.

Hafniaceae: containing the genera *Hafnia*, *Edwardsiella*, and *Obesumbacterium*.

Morganellaceae: containing the genera *Morganella*, *Arsenophonus*, *Cosenzaea*, *Moellerella*, *Photorhabdus*, *Proteus*, *Providencia*, and *Xenorhabdus*.

Budviciaceae: containing the genera *Budvicia*, *Leminorella*, and *Pragia*

Enterobacteriaceae: containing the remaining *Enterobacteriales* genera.

Enterobacter aerogenes has now been transferred to *Klebsiella aerogenes*. Although the clinical utility of this change remains to be seen, the change in taxonomy may bring confusion to clinicians as *Klebsiella* and *Enterobacter* genera are usually identified with different patterns of antimicrobial susceptibility.

Species of the genus *Propionibacterium* associated with human skin have now been placed in a new genus: *Cutibacterium*, which includes the species *Cutibacterium acnes*, *C. avidum*, and *C.*

granulosum; formerly *Propionibacterium propionicum* is now *Pseudopropionibacterium propionicum*.

The genus *Clostridium* has also undergone extensive revision. This genus has been reserved now for *Clostridium butyricum* while the rest of the species will be assigned to new genera. *Clostridium difficile* has now been assigned to the new genus *Clostridioides* thus the new designation *Clostridioides difficile*.

FUNGI

Historically, sexual and asexual forms of the same fungi species were given different names. However, molecular methods have allowed to confirm that these separate forms belong to the same species making the different names redundant.

As of January 2013, the dual-naming system is no longer permitted by the International Code of Nomenclature for algae, fungi, and plants.

This concept together with new molecular phylogenetic analysis will lead to significant changes in naming and classification of fungi.

Proposals for name changing and re-classification have been evaluated for the genus *Cryptococcus*, dermatophytes, *Blastomyces*, *Paracoccidioides*, and *Sporothrix*, among others.



PARASITES

Parasites have long been classified by morphological characteristics; following the trend in bacteriology and mycology, current classifications schemes are likely to evolve in the coming years.

Balantidium coli has now been reclassified as *Neobalantidium coli* to accommodate *Balantidium* species with warm-blooded hosts.

Diphyllobothrium species associated with human disease have been classified into two genera: *Adenocephalus* and *Dibothriocephalus*. The genus *Diphyllobothrium* has been reserved for cetacean (whale) parasites.

The genus *Adenocephalus* accommodates the previously named *Diphyllobothrium pacificum* while the genus *Dibothriocephalus* accommodates the species *D. latum*, *D. nihonkaiense*, *D. dendriticum*, *D. dalliae*, and *D. ursi*.

It is important to note that these changes in taxonomy do not have any clinical implications.

If a bacterial name is changed or a new species reported, it is the laboratory's responsibility to ensure that clinicians are aware of the significance of the organism being reported in these cases.

CONCLUSIONS

With the explosion of molecular techniques classification of microorganisms has undergone major changes. Phenotypic characteristics have shown not sufficient to classify and group organisms and thus, new group of bacteria, fungi, and parasites are being recognized and presented.

The new classifications may bring more understanding on the epidemiology, pathogenicity, and antimicrobial susceptibility of the organisms.

Caution however should be taken in reporting new or revised organisms to the clinician without the proper education or understanding of what the changes if any these new species or names may bring to the treatment of the patient.

It is the laboratory's responsibility to ensure that clinicians are aware of the significance of the organism being reported in these cases.

REFERENCES

1. CMPT critique PC124. 2012
2. Kraft CS, McAdam AJ, Carroll KC. A Rose by Any Other Name: Practical Updates on Microbial Nomenclature for Clinical Microbiology. *J Clin Microbiol.* 2016;55:3-4.
3. Munson E, Carroll KC. What's in a Name? New Bacterial Species and Changes to Taxonomic Status from 2012 through 2015. *J Clin Microbiol.* 2016;55:24-42.
4. Munson E, Carroll KC. An Update on the Novel Genera and Species and Revised Taxonomic Status of Bacterial Organisms Described in 2016 and 2017. *J Clin Microbiol.* 2019;57:10.1128/JCM.01181-18. Print 2019 Feb.
5. Warnock DW. Name Changes for Fungi of Medical Importance, 2012 to 2015. *J Clin Microbiol.* 2016;55:53-59.
6. Warnock DW. Name Changes for Fungi of Medical Importance, 2016-2017. *J Clin Microbiol.* 2019;57:10.1128/JCM.01183-18. Print 2019 Feb.
7. Simner PJ. Medical Parasitology Taxonomy Update: January 2012 to December 2015. *J Clin Microbiol.* 2016;55:43-47.
8. Mathison BA, Pritt BS. Medical Parasitology Taxonomy Update, 2016-2017. *J Clin Microbiol.* 2019;57:10.1128/JCM.01067-18. Print 2019 Feb.

Upcoming Events

MAY 2019

World Conference on Quality Improvement

May 20-22, Fort Worth, TX

More info: <https://asq.org/conferences/wcqi>

LABCON 2019

May 24-26, Fredericton, NB

More info: <https://labcon.csmls.org/>

JUNE 2019

ASM Microbe 2019

June 20 - 24, San Francisco, California

More info: <https://www.asm.org/Events/ASM-Microbe/Registration>

ABOUT CONNECTIONS

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Editor: Veronica Restelli

Contact Connections

By mail

Room G408, 2211 Wesbrook Mall,
Vancouver, BC V6T 2B5
Canada

By phone: 604- 827-1754

By fax: 604-827-1338

By email: restelli@mail.ubc.ca

Connections is available online:

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