Accreditation's Contribution to Patient Safety

by Dr. Bernard Gouget

SFBC-EFLM Representative; IFCC Treasurer; Secretary General, International Francophone Federation of Clinical Biology and Laboratory Medicine (FIFBCML)

Problems in patient safety were documented in the 1999 report, "To Err Is Human." Since that time, all sectors of the healthcare system have been called upon to reduce medical errors and harm to patients. An estimated 8%–12% of patients admitted to hospital in the EU suffer from adverse events while receiving healthcare, for example: healthcare-associated infections (accounting for approximately 25% of adverse events), medication-related errors, surgical errors, medical device failures, errors in diagnosis failure to act on the results of tests. Much of the harm to patients is preventable, but the implementation of strategies to reduce harm varies widely across the EU. With the growing emphasis on wider healthcare quality issues, patient safety is now on the healthcare agenda in most countries and high on the EU policy agenda. Nevertheless, patient safety is still a somewhat nebulous concept to many, and there is a need for a simple conceptual framework so that patient safety may be placed in context with respect to other healthcare activities. Patient safety can be defined as the reduction and mitigation of unsafe acts within the healthcare system, as well as with best practices shown to lead to optimal patient outcomes. Indeed, patient safety is a discipline in the healthcare professions that applies safety science methods toward the goal of achieving a trustworthy system of healthcare delivery. International efforts are underway to standardize taxonomy of key patient-safety concepts, and share learning across health systems.

Patient safety is often considered a component of quality, thus, practices to improve patient safety improve the overall quality of care. Efforts to improve patient safety depend on effective and sustained policies and programs being in place throughout Europe. The accreditation process for the medical labs/ hospitals is a way of identifying conditions of unsafe practice and supporting health care organizations to promote safe care. In particular, it is a means of reducing risk and fostering attention to continuous quality improvement. The accreditation process, with solid, clear indicators, is challenging for the specialists in lab medicine, but it remains one of the best ways to demonstrate their commitment to quality and safety. The output of laboratories is critical for those making decisions based on the data they produce. Poor data from laboratories leads to poor decisions, which may have catastrophic personal or financial impact on the people or organizations affected by those decisions. The competence of laboratories to perform specific tests, measurements, or calibrations should, therefore, be an issue of fundamental interest to both the clients of laboratories and their own management and staff.

Laboratory accreditation is the process now used comprehensively around the world to provide an independent appraisal and recognition of the specific competence of testing, impartiality, performance capability, and international acceptance. Accreditation is an enabler of quality and a core component of good clinical management; it is patient focused, objective, and operates within a peer review model. The laboratory's accreditation status is usually published by the accreditation body in its directory and this provides potential clients with full details of the scope of accreditation relevant to each laboratory. It is important to highlight that accreditation recognizes competence for specific tests or types of tests or measurements. It is not a general endorsement of the capabilities of laboratories to undertake any type of testing, unless that testing is covered by the laboratory's scope of accreditation. This is one of the reasons why in France, the accreditation covering 100% of tests is a mandatory requirement. Under mutual recognition agreements, laboratory accreditation could also contribute to enhance scientific, managerial and competitiveness as well as to facilitate harmonization of the lab medicine within European countries and worldwide. Laboratory accreditation may also have a positive influence on performance in other areas of health care systems by allowing laboratories to demonstrate high standards of service delivery. Accreditation, thus, may provide an effective mechanism for health system improvement yielding long-term benefits in the quality, cost-effectiveness, and sustainability of public health programs. Given the significant differences in perception of healthcare quality among the European citizens on one hand, and the wish for equal access to good quality care on the other, it is clear that, under the leadership of EFLM, there is a room for reflection on how reduce disparities between countries and a strong potential for great return on investment in improving patient safety through labs accreditation as official recognition for our knowhow.

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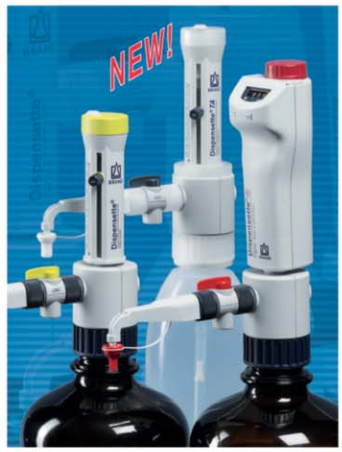

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Second EFLM-BD European Conference on Preanalytical Phase Held in Parma, Italy

After the very successful first EFLM-BD joint conference, which was held in Parma (Italy) in 2011, European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) in collaboration with BD Diagnostics, Preanalytical Systems has again organized a highly successful event for all laboratory professionals interested in the quality aspects of the preanalytical phase.

The second EFLM-BD European Conference on Preanalytical Phase was held in Zagreb (Croatia) from March 1-2, 2013.

Conference Session topics were:

- Blood collection practices
- Impact of preanalytical phase on laboratory medicine
- Guideline use and abuse
- Specialized testing
- Assessing the quality of the preanalytical phase

The audience had the opportunity to participate actively in an interactive e-voting session dealing with clinical cases associated with various sources of preanalytical interferences.

Almost 400 participants from all over Europe and even from the rest of the world have attended the conference.

There were 82 posters presented, out of which 6 were selected as oral presentations. Two Best Posters were awarded during the Closing ceremony. Conference participants had a chance to vote for the preferred poster and the Best poster award by the decision of the participants was given to Serkal Kiran from Turkey for the poster titled: An underestimated preanalytical error source: centrifuge temperature.

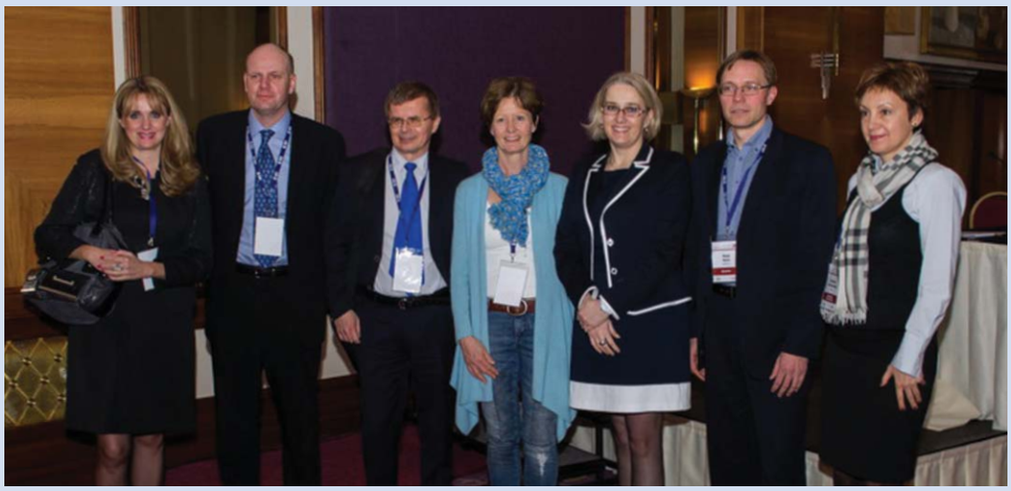

Photo: WG-Preanalytical phase members (From left to right): Zorica Sumarac, Stephen Church, Kjell Grankvist, Gunn BB Kristensen, Ana-Maria Simundic (WG chair), Mads Nybo and Svjetlana Kovalevskaya

Best poster award by the decision of Scientific committee went to Sylvie Mulliez from Belgium for her poster titled: Troponin T high sensitivity assay: serum or lithium heparin as specimen type?“

Conference abstracts were published in the journal Biochemia Medica (2nd EFLM-BD European Conference on Preanalytical Phase: Preanalytical quality improvement – in quality we trust. Biochemia Medica 2013;23(1):A1-A55) and are freely available at the journal web site: www.biochemia-medica.com.

Conference speaker abstracts were published as a joint Opinion paper in CCLM (Lippi G, Becan-McBride K, Behulova 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. CCLM 2013;51(1):229-41).

The Organizers thank the speakers and participants for their contribution to the success of this meeting and look forward to see you all at the third EFLM-BD Conference on Preanalytical phase, in April 2015 in Porto (Portugal).

12th EFLM Postgraduate Course Held in Dubrovnik

by Prof. Dr.Sc. Elizabeta Topic, president of the Organizing Committee

The 12th EFLM Postgraduate continuous course in Clinical Chemistry and Laboratory Medicine was held in Dubrovnik during November 10-11, 2012. The main topic of this year's course was New trends in classification, diagnosis, and monitoring of gastrointestinal diseases“.

Course organizers were Croatian Society of Medical Biochemistry and Laboratory Medicine, Slovenian Association for Clinical Chemistry and European Federation of Clinical Chemistry and Laboratory Medicine with the cooperation of Inter University Center Dubrovnik. The course was held under the auspices of IFCC.

Thirty students from different European countries attended the course. Travel and accommodation grants were available for young participants (under 35 years).

Course materials were published in a course handbook. In this book, state-of-the-art on gastrointestinal classification and epidemiology as well as new approach to diagnosis and management of gastrointestinal diseases is presented by well-known experts. These renowned experts in different fields have tried to cover the clinical and laboratory aspects of gastrointestinal diseases with the accent to gastrointestinal nutrition-related disease, gastrointestinal disease in children, chronic gastrointestinal diseases, and gastrointestinal oncology. Here are some of the course lectures: Guidelines on colorectal cancer screening, Role of EGFR and Ras pathway in colon cancer, Screening and confirmation of malabsorption, Refeeding syndrome, Bowels control brain: gut hormones and obesity, Immunological markers of inflammatory bowel diseases.

Results of evaluation showed that majority of the participants were very satisfied with the course organization and with the quality of teaching materials.

Organizers would like to thank Croatian Ministry of science, education and sport and IVD companies (Abbott, Beckman Coulter, Roche, JGL, Medilab) who helped organizing the course. Course handbook can be downloaded from the EFLM website (www.efcclm.eu/downloads).

News from the Greek Society

by A. Grigoratou, Member of the scientific committee of Greek Society of Clinical Chemistry - Clinical Biochemistry

The 10th Greek Conference on Clinical Chemistry was successfully held in Athens, from October 19-20, 2012, at the 251 Air Force General Hospital.

The Young Scientists Committee Round Table presented "The map of the Greek public hospital clinical labs" by Myrto Rizou and "The importance of Proficiency Testing Schemes" by Effie Haviara.

The next round table was dedicated to the clinical lab accreditation (Chair: Dr. Angeliki Ferderigou) and included two lectures, "The ISO 15189:2007, Medical laboratories. Particular requirements for quality and competence" by Joanna Athanasiadou and "ESYD: the Hellenic Accreditation System S.A." by Dr. Aliki Stathopoulou.

A round table referred to bacterial resistance to antibiotics (Chairs: Evangelos Vogiatzakis, Violeta Kapsimali): phenotypes of bacterial resistance to antimicrobial agents, the automated systems diagnosis, antibiotic resistance genes, phylogeny and epidemiology of antibiotic resistant pathogens and consisted of three lectures by Prof. Josef Papaparaskevas, Prof. Panayiotis Tassios, of Prof. Leonidas Tzouvelekis (Medical School, Athens University).

Russell Watts (MRSC; Waters Corporation, Manchester) spoke on "The routine use of LCMSMS in the clinical laboratory" in an industry-sponsored lecture.

It was followed by George Kollios' (Ioannina University hospital) lecture on "The sex hormone-binding globulin (SHBG) in the polycystic ovary syndrome."

A very interesting round table on Evidence-based clinical guidelines in patient testing (Chairs: Loukas Dadiotis, Ioannis Papasotiriou) included the lectures of Prof. Argyri Gialeraki "Clinical recommendations on testing for thrombophilia," and Prof. Demetrios Rizos' "Pregenetic diagnosis of chromosomal abnormalities" (Medical School, Athens University), Alexandra Tsirogianni's (Evangelimos Hospital, Athens) "The immunology lab – clinical interface," and Vassilis Barbounis' (Hippocratio Hospital, Athens) "Tumor markers in clinical practice."

On the first day of the conference, the cultural program included an exciting lecture on the Antikythera wreck: the ship, the treasures, and the mechanism, by Dr. Elena Vlahoghianni (Greek National Archaeology Museum).

The next day the first round table covered "The contribution of genetic variation to complex disease traits" (Chairs: Michael Koupparis, Andreas Scorilas). It consisted of the lectures of Dr. Athanassios Kalogeridis (Hippocratio General Hospital, Thessaloniki): "The biological importance of nucleic acid polymorphisms"; Prof. Evi Lianidou (Chemistry School, Athens University): "Next generation sequencing"; Prof. Vassilios Spyropoulos (Technological Education Institute of Athens): "The mathematical complexity and the contribution of the emerging technologies in diagnosis and decision making".

The last, but not least, round table informed us about the activities of our society (GSCC-CB): Dr. Othon Panagiotakis (Evangelimos Hospital, Athens): "ESEAP: the national External Quality Assessment Scheme for clinical chemistry in Greece and Cyprus"; Dr. Alexander Haliassos: "LAB TESTS ON LINE, a public resource on clinical lab testing from laboratory professionals who do the testing"; Prof. Christos Kroupis (Medical School, Athens University): "The Greek participation in the IFCC WG: in vitro diagnostics-working group", and Prof. Evi Lianidou (Chemistry School, Athens University): "Education and Management Division EMD".

A lot of healthcare professionals and students from all over Greece attended the 2012 Conference. It was a successful Conference and it had a high quality scientific program, though organized in the current gloomy financial circumstances.

Photo: (From left to right) President of GSCC-CB Dr. Katerina Psarra, The President of the 10th Greek Conference on Clinical Chemistry Dr. Panagiota Spyropoulou, and president of the Organizing Committee Dr. Effie Botoula.

EFLM Speakers Bureau

The European Federation for Clinical Chemistry and Laboratory Medicine (EFLM) is going to produce a list of speakers.

The idea is that National Societies can apply for such speakers for their conferences. EFLM will then pay for travel and the conference organizer will pay for the accommodation. We decided to start with speakers among the EFLM officers, and ask if you are willing to have your name on this list. The list will be on the homepage of EFLM at the following link www.surveymonkey.com/s/EFLM_Speakers_Bureau. You can enter your name, e-mail address, topics for lecturing, language for talk and language for slides.

The link will remain open until March 31, 2013.

After collecting the topics, we will go through the list and make a final list of the speakers that will be offered from EFLM.

Looking forward to hear from you soon. Sincerely.

Sverre Sandberg, EFLM Chair of the Committee Science; Elizabeta Topic, EFLM Chair of the Education and Training Committee

Commercial Immunoassays in Biomarkers Studies: Researchers Beware

by Nader Rifai[1,2], Ian D. Watson[3], and W. Greg Miller[4]

Departments of [1] Laboratory Medicine and [2] Pathology, Boston Children's Hospital and Harvard Medical School, Boston, MA; [3] Department of Clinical Chemistry, University Hospital Aintree, Liverpool, UK; [4] Department of Pathology, Virginia Commonwealth University, Richmond, VA.

In the last few years, there has been a marked increase in the number of scientific publications on biomarker research. According to the NIH RePORT database, of the >14,000 grants for biomarker research funded between 2009 and 2011, > 4,000 dealt with biomarker discovery and validation[1]. A search with "biomarker" in PubMed identified approximately 140 000 publications from the same period. The great interest in biomarkers reflects their clinical utility. Biomarkers are routinely used in the diagnosis, staging, screening, and prediction of risk of disease, for prediction and monitoring of treatment response, and for treatment compliance.

Additionally, the search for a biomarker to be used as a surrogate for a clinical end point in clinical trials is of considerable interest, because it has the potential to shorten the trial, thus reducing both cost and the time to get novel therapies to patients.

The biomarker pipeline is a long and uncertain road. It involves multiple complex steps and requires the talents of a diverse group of scientists, including analytical and protein chemists, mass spectrometrists, clinical chemists, and clinical investigators. The paradigm starts with a discovery stage and progresses to qualification, verification, and, finally, validation of the candidate biomarker for an intended clinical use[2]. The four stages differ with respect to types of samples used, the technologies employed, and the patient populations examined, with the emphasis changing from sensitivity to specificity as one proceeds downstream. Typically, various types of mass spectrometers are used in the first three stages, with immunoassays being used for clinical validation (diagnostic accuracy and predictability) and eventual use in a clinical laboratory. ELISAs are preferred to RIAs because radioisotopes are not required for the former, and given that multiplexing is an approach based on compromise, candidate biomarkers are currently evaluated individually. As the analytical sensitivity and specificity of tandem mass spectrometry assays improve, the simultaneous quantification of multiple candidate biomarkers is increasingly likely to become a reality[3]. At present, however, scientists usually develop multiple immunoassays to validate their discovery. Capture and detection antibodies are developed to recognize different epitopes in the biomarker. Developing a set of immunoassays requires incorporating each antibody pair into each assay, optimizing the assay conditions and the performance of the antibody pairs, and validating the analytical performance of the assays-a costly and time-consuming endeavor.

Ideally, scientists would prefer to purchase a commercially available immunoassay for a biomarker that enables them to validate that candidate biomarker for a particular clinical use; this option might also offer a measure of consistency if other researchers were to use the same kit. Previously, assays for novel biomarkers such as caveolin-1, irisin, meprin A, and filimin B have not been commercially available; however, kits for the measurement of hundreds of such analytes in humans, dog, horse, mouse, rat, cow, monkey, pig, and a variety of other species can now be purchased from distributors in the US, Europe, and other parts of the world. Although commercially available kits might initially be viewed as a step forward by biomarker and proteomics researchers, users of these kits are advised to proceed with great caution.

In a recent commentary in Nature entitled "A Recipe for Disaster," Anna Git, a cancer researcher at Cambridge University, described her nightmarish experience with chemically synthesized stretches of RNA from a company that did not reveal much information about the characteristics of the product[4]. As a result, 12 months of her group's experiments were useless.

Biomarker and proteomics researchers might find themselves in a similar predicament if they do not carefully evaluate and assess the specifications and analytical performance of the kit they wish to use. A potentially useful biomarker might be dismissed-and hundreds of thousands of dollars of taxpayers' money wasted-if the assay used in the validation study is of poor quality and does not measure the stated analyte with the expected analytical sensitivity and specificity.

Assays sold as "for research use only" are not regulated by the US Food and Drug Administration or equivalent European agencies as part of Health Technology Assessment. Therefore, the information provided by the manufacturer about the assay characteristics may not be adequate, and the analytical performance of the assay may not be fit for purpose. Listed below are guidelines for researchers and manufacturers about the minimal expectations of a commercial research immunoassay kit.

1. Before purchasing the assay kit, researchers must review the package insert posted on the company's website or request it directly. A detailed description of the assay, the capture and detection antibodies, and the methods used for antibody purification and conjugation must be provided. Manufacturers are strongly encouraged to specify the biomarker epitopes recognized by the antibodies used, if this information is available.
2. The source of the reference material for calibration must be unequivocally identified. The method of validation of the reference material should be clearly given.
3. The performance characteristics of the assay must be clearly described in the insert sheet and include:
   - Sensitivity,
   - Linearity,
   - Recovery (evaluated with a purified protein),
   - Reproducibility (at different concentrations, within runs, between days, and total),
   - Repeatability (with different calibrator and reagent lots),
   - Interference from similar molecules likely to be encountered in the intended clinical samples,
   - Specificity for the intended biomolecule (information should include a listing of all potential crossreactants that were examined),
   - Preliminary reference intervals indicating the biomarker concentrations seen in apparently healthy individuals.
4. Users must validate the analytical performance of the assay and confirm the manufacturer's claim before they use it in their studies with standard protocols[5,6].

Inadequate or incomplete information in the insert sheet about assay characteristics and performance should alert researchers to be concerned about the validity and suitability of the kit. Clinical validation is a crucial step in the biomarker pipeline, and the assay used for this assessment must be analytically sound. Both the manufacturers of assay kits and the researcher who uses them are responsible for assuring that the analytical quality of the assay is suitable for the intended use. Distributors of these kits also bear some responsibility and must require the manufacturer to adequately state the performance characteristics of the assays before making them available to researchers.

Failure to address these matters will hinder our ability to conduct valid studies of biomarkers, and that may lead to serious errors in the evaluation of candidate biomarkers. These steps are essential to assure funding agencies, the scientific community, and taxpayers that the results of the research will be reliable and that any new biomarkers used in clinical medicine will be robust and will contribute to improved patient outcomes.

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