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Happy Holiday Season

Season's Greetings from  
the President of the EFLM

Dear Colleagues and Friends,

I hope that this message finds you well at the end of 2019, and I want to take the opportunity of the December issue of our EuroLabNews to convey this season's greetings to all of you from me personally and also on behalf of the Executive Board of our EFLM. As in the past years, the EB has taken the chance to follow your invitations to various national meetings and events in 2019 to meet many of you face-to-face for an exchange

of ideas and to listen to your critiques and suggestions. We are very proud to have been able to expand the number of enthusiastic colleagues to take an interest into EFLM matters and programs and to join various Committee groups and task forces. 2019 has been a remarkable year for a number of reasons: first, with the help of our Spanish colleagues and friends, EFLM and IFCC have scored a big success for scientific Laboratory Medicine with the EuroMedLab 2019 in Barcelona, and we are already well on our way to the 2021 EuroMedLab in Munich, Germany. Also in Barcelona, the General Meeting has elected new colleagues for the EB from a body of very distinguished candidates previously nominated by the National Societies. As a result, it is my distinct pleasure to welcome the next President-Elect Prof. Tomris Ozben (Turkey), the new Treasurer Prof. Klaus Kohse (Germany) and two

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## Foreword

by Harjit Pal Bhattoa, Editor EFLM EuroLabNews



The EFLM President Michael Neumaier inaugurates this year's final EuroLabNews issue with his Season's Greetings. Janos Kappelmayer, the President of the Hungarian Society of Laboratory Medicine, is the author of this issue's Hot Topic Column, with his thought provoking article on the Importance of the Post-Analytical Phase in Laboratory Medicine.

Giuseppe Lippi, EFLM Executive Board Secretary, reaffirms the EFLM Executive Board initiative to facilitate closer collaboration with its National Society Members by sponsoring presentations by Executive Board representatives on EFLM activities at National Congresses. Evgenija Homsak, Chair of the EFLM Working Group Congresses and Postgraduate Education highlights the Postgraduate Courses held by EFLM speakers in Finland, Russia, Turkey and Ireland. Gilbert Wieringa, EFLM Profession Committee Chair and Giuseppe Lippi, EFLM Executive Board Secretary summarize the findings of the Equivalence of Standards survey and highlight the benefits of the EFLM Academy. Ana-Maria Simundic, Chair of the EFLM Task and Finish group for Hemolysis, Icterus and Lipemia indices presents an insight into the recent groundbreaking activities of their EFLM Functional Unit. Daniel Rajdl, Communication Committee Chair reports on the recent important EFLM publications with figures summarizing the take-home messages.

To be continued on page 2





*Continued from Foreword*

Don't miss out on the upcoming EFLM Webinar by Sedef Yenice on Leadership Management for Laboratory Professionals and the 3rd EFLM Strategic Conference on Demand Management in Zagreb. Under Past EFLM events, reports on the EFLM Postgraduate Course on Biostatistics in Laboratory Medicine held in Helsinki, Finland are presented by Anna Linko-Parvinen, President of Finnish Society of Clinical Chemistry (SKKY), Outi Itkonen, SKKY Vice President and Jonna Pelanti, SKKY Secretary, and the one held in Athlone, Ireland by Dr David Green, Mater Misericordiae University Hospital, Dublin. The National Society's of Croatia, Czech Republic, Ireland, Spain and UK outline their recent professional activities. The IFCC corner summarizes happenings in Laboratory Medicine with a global perspective. Mark the dates, the Calendar of Events lists all events in our field. On behalf of the EuroLabNews team, I wish you all a peaceful festive season and a Happy and Prosperous New Year.

*Continued from Season's Greetings from the President of the EFLM*

members at large, Prof. Pilar Fernandez-Calle (Spain) and Prof. Dalius Vitkus (Lithuania), who we all look forward to work with in our new EB team. Obviously, this provides the opportunity to thank the outgoing EB members Prof. Sverre Sandberg, Prof. Huib Storm, Prof. Tomas Zima and Prof. Tiago Guimaraes for their devotion to the work in the EB and the many important contributions they made over the periods of their mandates. Second, 2019 has shown that Laboratory Medicine continues to change not only due to further rapid developments in analytical technologies. Digitalization continues to expand throughout all of medicine and it does so particularly in our profession. It is very clear now that future clinical decision making will make use of integrated data and the secondary use of such data in Laboratory Medicine, and this represents both a big challenge and an opportunity for us in the medical dialogue. I am proud to announce that EFLM has signed a strategic Memorandum of Understanding with the European Society for Radiology (ESR) aiming to explore synergies between our disciplines and to establish the new concept of "Integrative Diagnostics" for the benefit of the patient. Together, EFLM and ESR are now actively pursuing to further Diagnostic Medicine through professional and scientific activities in an interdisciplinary approach starting out by organizing joint conference appearances, as carried out for the first time in the 2019 CELME meeting in Prague (see the recording of a presentation *Is there Synergism in Laboratory and Radiology Services Interaction?*) followed by future mutual invitations to the ECR 2020 in Vienna and the EuroMedLab 2021 in Munich. Thirdly, EFLM has started a collaboration with the Arab Federation for Clinical Biology (AFCB). In this initiative, currently chaired by Prof. Alexander Haliassos from Athens, the joint task force "Laboratory Medicine for Mobile Societies" (LM4MS) featuring representatives from both IFCC Regional Federations together with an IFCC liaison officer aim to develop new diagnostic strategies in order to support healthcare in areas of heavy people migration and offer collaboration with international NGO help organisations. LM4MS will hold a first specialized conference in Hammamet, Tunisia in October 2019. Finally, as I am writing to you, the 1st of December will see the launch of the EFLM Academy, a new platform to offer more comprehensive member services within the EFLM. These include free online subscription to CCLM and CLSI documents, the access to internal EFLM educational activities etc.. We hope that the EFLM Academy will also help to expand our EuSpLM register. Following the announcement made this summer, the President-elect Prof. Simundic has given a highly attended webinar to introduce you to our EFLM Academy initiative. You can watch the webinar recording in EFLM e-Learning platform. Please consult the website on [www.EFLM.eu](http://www.EFLM.eu) for details. Dear colleagues and friends, EFLM

continues to be an active, innovative and lively Federation in international Laboratory Medicine. I hope, my few examples have convinced you that our activities are worth supporting, and on behalf of the entire EB I can only encourage you to become engaged in the various areas, in which we try to develop our field of diagnostic medicine. I want to leave you with these thoughts and wish you a pleasant holiday season and a good start into 2020.

Yours sincerely  
Michael Neumaier

#### HOT TOPICS IN LABORATORY MEDICINE

### The importance of the extra-analytical phases in laboratory medicine

by János Kappelmayer, Department of Laboratory Medicine,  
University of Debrecen, Hungary



Clinician: Hello this is me Dr X.  
Clinical pathologist: Hi, here is Dr. Y from the lab.  
Clinician: Oh hi, so how much ?  
Clinical pathologist: It is exactly 30 !  
Clinician: Oooh really, but 30 what ?  
Clinical pathologist: Well, it depends on what is how much ?

Similarly short and moderately fruitful conversations may deteriorate the relationship between the clinical laboratory and the physician treating the patient. The communication should cover all areas of the laboratory work that also implies the extra-analytical phases. These are not merely the pre- and postanalytical phases but equally importantly the pre-pre and post-post analytical phases, that is the selection of the appropriate tests for the patient and the appropriate interpretation of the complex laboratory results.

It is unnecessary to emphasize for laboratory specialists that only a low percentage of laboratory errors emerge from the actual measurements i.e. the analytical phase. This phase was always considered as the core activity for clinical labs and has been thoroughly controlled for several decades both by daily normal and pathological control sample measurements as well as in national and international surveys. Accreditation bodies require the demonstration that successful participation in such external



QC programs are regularly practiced. However, the quality of the extra-analytical phase has only recently been brought to light. The preanalytical phase determines all subsequent results and is of key importance (1-3). In Europe an initiative has been launched that covers all areas of the laboratory preanalytical phase and in 2019 already the 5th international conference has been organized on this topic: 5th EFLM Conference on Preanalytical Phase. The professional issues (sample storage conditions, types of anticoagulants, sample labeling, order of blood draw, fasting versus nonfasting samples, etc) are very important but a major determinant on how clinicians judge the work of a hospital laboratory is related to the speed at which the lab delivers the results. If the lab results are extremely punctuate but do not arrive on time it is always a source for dissatisfaction. In my opinion, there are at least two ways, how a fast and reliable reporting can be achieved (i) using a pneumatic tube system or other advanced automated delivery means in the preanalytical phase and (ii) using autoverification (also called autovalidation) in the postanalytical phase (4-6). If none of these are practiced in the laboratory, than the cumbersome gathering and transport of samples to the laboratory as well as the slow and tedious sometimes boring manual validation of all individual laboratory reports delay reporting data. Back to the starting conversation on what is 30, we have to draw the attention on result interpretation in the clinical laboratory. Whatever is mentioned here can be a matter of harsh debate since at one end there are people who insist on nearly all laboratory reports to be interpreted, while on the other end some people declare that no interpretation is required at all, we have to leave it for the clinician. Again my personal opinion and experience from the past more than 30 years, suggest that this activity has to be adjusted to the work that the clinical pathologist is doing. Over-interpretation of trivial laboratory findings is useless and compromises the laboratory. Nevertheless, there are numerous areas in general clinical chemistry as well as in hematology that also requires interpretation from the laboratory expert (7-8). Furthermore, there are several specialized areas in laboratory medicine where the actual interpretation is even more important than the numerical values that were measured. For clinical flow cytometry results the international recommendation is that it is not just superfluous to report all measured cluster differentiation (CD) marker results in percentages, but it is also harmful and the laboratory expert has to extract the essential findings and based on those have to describe a short expert opinion. Similar expert opinions - sometimes with predetermined formats - are required in many other areas like molecular diagnostics, autoimmunity tests, special coagulation reports, cytogenetic reports and many others. So, our activity has to be covered by the well-know term "from vein to brain" that is not just applicable for the turnaround time but for all what we do in laboratory medicine

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#### EFLM EXECUTIVE BOARD INFORMS

## Reconfirmation for 2020 of the EFLM initiative: "Invite an EFLM Executive Board Representatives at your National Congress"

by Ana-Maria Simundic, Chair of the EFLM WG-Preanalytical Phase

The EFLM Executive Board is pleased to announce that the EFLM is willing to continue in 2020 the EFLM initiative "Invite an EFLM Executive Board Representatives at your National Congress" which promotes closer collaboration between EFLM and its National Societies.

As previous experience has confirmed, the EFLM Executive Board believes this is mutually beneficial and therefore feel there is a need for maintaining and promoting the attendance of its Executive Board members at National or Regional Congresses organised by its Member Societies.

For those selected applications (5 in total), EFLM will cover the entire travel and accommodation cost for the Executive Board representative. Moreover, selected events will also be granted with EFLM auspices.

The participation of the Executive Board representative foresees a slot during the Opening Ceremony where the Executive Board representative can briefly present EFLM activities and extend EFLM greetings to participants followed by the possibility to ask the Executive Board representative to make a plenary lecture on a specific topic to be agreed jointly.

The selection of applications is guided by the principle of geographic distribution and those National Societies which apply for the first time have the priority.

Further information on the initiative can be found on the EFLM webpage.

**With this initiative EFLM reaffirms the closer collaboration with its National Society Members!**



Education & Training Committee and the EFLM Executive Board are working to find financial support from IVD companies for this initiative in order to be able to deliver a good number of these courses at EFLM expenses, but in the meantime, the Executive Board decided to offer two courses in 2020 where the speakers' travels will be directly covered by the EFLM budget. For any further information on this initiative, please contact [eflm@eflm.eu](mailto:eflm@eflm.eu).

#### NEWS FROM EFLM FUNCTIONAL UNITS

## EFLM Postgraduate Courses in 2019: the EFLM speakers' teams travelling to Finland, Russia, Antalya and Ireland

by Evgenija Homsak, Chair of the EFLM Working Group Congresses and Postgraduate Education

According to the results of the satisfaction survey that EFLM conducted in 2017 to understand the expectations from its National Society Members, it was noted the great demand for educational tools. The EFLM Executive Board carefully considered this issue and explored which would have been the best solution to respond to this need. It was decided to ask the EFLM Education & Training Committee to organize two EFLM courses to be proposed to our National Societies.

In 2019, EFLM National Society Members were offered to host an EFLM Postgraduate Course which was prepared by the EFLM Working Group on Congresses and Postgraduate Education and proposed as a "turnkey course", i.e. with a defined structured programme and designated speakers' team ready to travel in the requesting EFLM country to deliver the EFLM course. Each course was held by two speakers and addressed to a small group (up to 50 participants).

Two courses were offered:

- Biostatistics in Laboratory Medicine
- How to write a good scientific and professional article

The following courses were successfully delivered in 2019:

1. EFLM Postgraduate Course on Biostatistics in Laboratory Medicine in collaboration with the Association of Laboratory Specialists and Organizations «Federation of Laboratory Medicine Moscow (RU), 14 September 2019
2. EFLM Postgraduate Course on Biostatistics in Laboratory Medicine in collaboration with the Finnish Society of Clinical Chemistry Helsinki (FI), 18-19 September 2019
3. EFLM Postgraduate Course on "How to write a good scientific and professional article" in collaboration with the Turkish Biochemical Society Antalya (TR), 26-27 October 2019
4. EFLM Postgraduate Course on Biostatistics in Laboratory Medicine in collaboration with the Association of Association of Clinical Biochemists in Ireland Athlone (IR), 7 November 2019

In 2020, the initiative will be proposed again to EFLM National Societies. The hosting National Society is asked to support the full cost related to the course (local organization, meeting room, catering and Speaker's travel and accommodation). The EFLM







## Outcome from summer 2019's Equivalence of Standards survey

by Gilbert Wieringa, EFLM Profession Committee Chair and Giuseppe Lippi, EFLM Secretary

With the extension of EFLM's Register of Specialists in Laboratory Medicine from EU Member States to Europe in 2018 and the launch of the EFLM Academy in January 2020 (see adjoining article - News flash: Specialists in Laboratory Medicine launch the EFLM Academy!) this survey was carried out to determine 'status quo' and state of readiness to meet EFLM's Equivalence of Standards for specialist practice. Highlights from the survey include:

- Responses were received from 27 national societies. For a further three societies (Ireland, North Macedonia, Ukraine) communication is ongoing about either readiness to meet Equivalence and/or establishing auto-registration. (The EFLM Office [eflm@eflm.eu](mailto:eflm@eflm.eu) will still welcome survey responses from Albania, Austria, Bulgaria, France, Iceland, Kosovo, Montenegro, Latvia, Luxembourg, Norway and Switzerland).
- Equivalence applications were submitted at the same time by six national societies (Russia, Turkey, Israel, Lithuania, Bosnia-Herzegovina, Slovakia), three of which were immediately approved, further information (e.g. level of exit qualification/ evidence of licence to practice at specialist level) is being sought from the others.
- Amongst EU Member States 27 have previously/recently had Equivalence recognized for medical staff, 21 for non-medical staff (i.e., scientists/pharmacists). Amongst non- EU Member States, it is a pleasure to report that Equivalence has been recognized for Serbia, Israel, Bosnia Herzegovina and North Macedonia over 2018/2019.

A national society's Equivalence of Standards is recognized when there is evidence of:

- Minimum 9 years (ideally 10) years academic (4/5 years) and specialist (4/5 years) training;
- Education and training to standards set in the EFLM syllabus;
- A Master's degree (or equivalent) in Medicine, Pharmacy or Science;
- An exit qualification (postgraduate certificate) which meets the EFLM "Equivalence of Standards" as indicated below in the curriculum requirements;
- Evidence of participation in continuous professional development (CPD).

Whilst registrants will automatically be offered the benefits of EFLM Academy membership, the importance of supporting the EFLM Register is also to add weight to the case for recognition of specialist practice under EU Directive 2013/55/EU (The recognition of Professional Qualifications) – see EFLM's web page about the Register.

For national societies who have yet to submit evidence of Equivalence for medical, scientific or pharmacy trained specialists, the Profession Committee welcomes applications [here](#).

## Newsflash: Specialists in Laboratory Medicine launch the EFLM Academy!

by Evgenija Homsak, Chair of the EFLM Working Group Congresses and Postgraduate Education

Specialists on the EFLM Register will automatically become the Academy's inaugural members at its launch on 1st January 2020 and will immediately be able to make the most of the benefits of membership:

- Free online subscription to Clinical Chemistry and Laboratory Medicine, the official EFLM journal;
- Unlimited access to all documents (laboratory standards) of the CLSI (Clinical and Laboratory Standards Institute) database;
- Regular e-mail notifications of all EFLM activities, programmes and opportunities;



- Eligibility to apply for EFLM travel grants (only Academy members will be able to do so from Jan 2020)
- Reduced registration fee to EFLM conferences and courses (except jointly organised events)
- Free access to EFLM webinars

The benefits will not be restricted to specialists alone. From January onwards Academy membership will be open to all members of EFLM-affiliated national societies either by individual or block auto-registration from national societies. Processes for auto-registration of specialists are already in place in UK, Netherlands, Slovenia and can be readily extended to include all those who wish to join the Academy by contacting the EFLM office ([eflm@eflm.eu](mailto:eflm@eflm.eu)).

Establishing the Academy builds on EFLM's central role in harmonising the highest quality standards and expectations in education, training and qualifications of specialists across Europe. Further information about the drivers for and membership of the Academy can be accessed from the EFLM web site ([here](http://www.eflm.eu)) and summer 2019's EFLM News article ([here](#)).

## NEWS FROM EFLM FUNCTIONAL UNITS

### Recent activities of the EFLM Task and Finish group for HIL indices (TFG-HIL)

by Ana-Maria Simundic, Chair of the EFLM Task and Finish group for HIL indices (TFG-HIL)

Hemolysis, icterus and lipemia (HIL) may seriously affect sample quality and alter laboratory test results. Although automated systems for HIL indices are now in widespread use, they still suffer from some important drawbacks and shortcomings. These issues are mainly related to the measurement procedure, design of the interference study, the way interference data are reported and the lack of harmonized interference cut-offs.

In March 2018 the EFLM Working group for Preanalytical Phase (WG-PRE) has published a paper: von Meyer A, Cadamuro J, Lippi G, Simundic AM. Call for more transparency in manufacturers declarations on serum indices. On behalf of the Working Group for Preanalytical Phase (WG-PRE), European Federation of Clinical Chemistry and Laboratory Medicine (EFLM). Clin Chim Acta. 2018;484:328-332.

With this paper, the EFLM WG-PRE has aimed to increase awareness about the need to improve the way manufacturers of laboratory assays describe the information about the effect of serum indices on their methods to end users.

In May 2019, during the Euromedlab congress in Barcelona, EFLM

Executive Board has discussed this problem with all major IVD representatives. IVD representatives were invited to work together with EFLM to improve this issue and a Task and finish working group for HIL indices (TFG-HIL) was formally established to deal with this problem. All major IVD manufacturers, including a clinical laboratory automation company, have joined the group and the current TFG-HIL composition is as follows:

- Ana-Maria Simundic, chair (Zagreb – Croatia)
- Giuseppe Lippi (Verona – Italy)
- Alexander von Meyer (Weiden in der Oberpfalz – Germany)
- Vincent Chen (Snibe Diagnostic)
- Audrey Carlo (Stago)
- Eros Giuri (Inpeco)
- Dusanka Kasapic (Roche Diagnostic)
- Jason Kellogg (Siemens Healthcare Diagnostics)
- Patrick Power (Beckman Coulter)
- Scott A. Ruetten (Abbott Diagnostics R&D)
- Anne Skurup (Radiometer)
- Remo Tazzi (Instrumentation Laboratory)

General aims of the TFG-HIL are to collaborate with IVD manufacturers to improve the quality and scope of the data on HIL indices provided to end-users of laboratory reagents and equipment. TFG-HIL aim is also to promote the importance of the issues related to the HIL detection and management among laboratory professionals.

Specific aims are to improve the way of reporting:

- the data and information about the method of assessment of serum HIL indices
- the HIL indices (as continuous values, transferable to the LIS)
- the information about the setup of interference experiments
- the results of interference experiments (interferograms, raw data)

The working group has had its kick-off meeting in Munich in September 2019, where the background and aims of this initiative were first presented by Ana-Maria Simundic, TFG-HIL chair. Afterwards, TFG-HIL members and IVD representatives have discussed about the best way to meet the needs and expectations of the end-users. Meeting has been very productive and has enabled both sides to understand obstacles and barriers which need to be overcome in order to reach the desired goals. A broad consensus was reached during the meeting and all IVD representatives have committed to initiate internal discussions and activities with the aim to improve the current state.

Next meeting will take place in March 2020 in Paris, where all TFG-HIL IVD representatives will present their proposals for how to meet all requirements related to HIL testing, overviewed in details in the EFLM paper (Clin Chim Acta. 2018;484:328-332.).



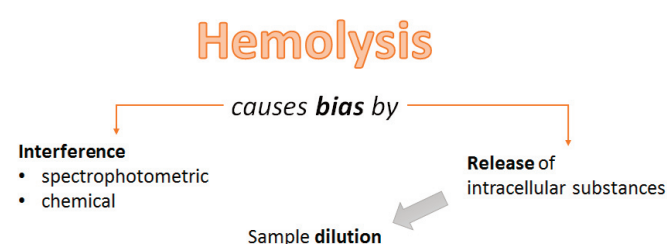


# Managing hemolyzed samples in clinical laboratories

Simundic AM, Baird G, Cadamuro J, Costelloe SJ, Lippi G.  
 Crit Rev Clin Lab Sci. 2019 Oct 11:1-21. Full text available here.  
 reported by Daniel Rajdl, Communication Committee Chair

Hemolysis is conventionally defined as membrane disruption of red blood cells and other blood cells that is accompanied by subsequent release of intracellular components into the serum or plasma. It accounts for over 60% of blood sample rejections in the laboratory and is the most common preanalytical error in laboratory medicine. Hemolysis can occur both in vivo and in vitro. Intravascular hemolysis (in vivo) is always associated with an underlying pathological condition or disease, and thus careful steps should always be taken by the laboratory to exclude in vivo hemolysis with confidence. In vitro hemolysis, on the other hand, is highly preventable. It may occur at all stages of preanalytical phase (i.e. sample collection, transport, handling and storage), and may lead to clinically relevant, yet spurious, changes in patient results by interfering with laboratory measurements. Hemolysis interference is exerted through several mechanisms: (1) spectrophotometric interference, (2) release of intracellular components, (3) sample dilution and (4) chemical interference [Figure 1].

**Figure 1:** How can hemolysis influence bias.



The degree of interference observed depends on the level of hemolysis and also on the assay methodology. Recent evidence shows that preanalytical practices related to detection and management of hemolyzed samples are highly heterogeneous and need to be standardized. The Working Group for Preanalytical Phase (WG-PRE) of the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) has published many recommendations for facilitating standardization and improvement of this important preanalytical issue. Some key EFLM WG-PRE publications related to hemolysis involve: (i) a call for more transparency and some practical recommendations for improving the harmonization of the automatic assessment of serum indices and their clinical usefulness, specifically the hemolysis index (H-index), (ii) recommendations on how to manage local quality assurance of serum or plasma hemolysis/icterus/lipemia-indices (HIL-indices) and (iii) recommendations on how to detect and manage hemolyzed samples in clinical chemistry testing. In this review we provide a comprehensive overview of hemolysis, including its causes and effects on clinical laboratory assays. Furthermore, we list and discuss the most recent recommendations aimed at managing hemolyzed samples in everyday practice. Given the high prevalence of hemolyzed blood samples, the associated costs, the great heterogeneity in how hemolysis is handled across healthcare settings, countries and continents, and increasing patient cross-border mobility, standardization and quality improvement processes aimed at combating this important preanalytical problem are clearly warranted.

# Setting clinical performance specifications to develop and evaluate biomarkers for clinical use

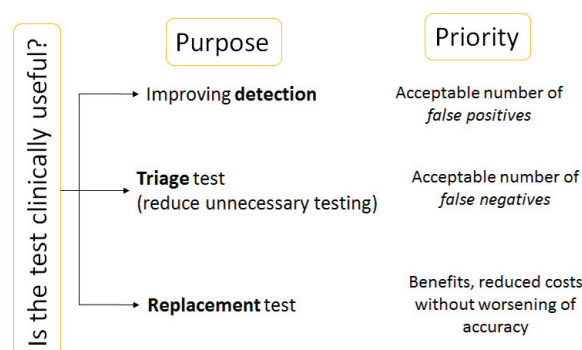
Lord SJ, St John A, Bossuyt PM, Sandberg S, Monaghan PJ, O'Kane M, et al.  
 Ann Clin Biochem. 2019 Sep 16;56(5):527-35. Full text available here.  
 reported by Daniel Rajdl, Communication Committee Chair

Biomarker discovery studies often claim 'promising' findings, motivating further studies and marketing as medical tests. Unfortunately, the patient benefits promised are often inadequately explained to guide further evaluation, and few biomarkers have translated to improved patient care. We present a practical guide for setting minimum clinical performance specifications to strengthen clinical performance study design and interpretation.

We developed a step-by-step approach using test evaluation and decision-analytic frameworks and present with illustrative examples.

We define clinical performance specifications as a set of criteria that quantify the clinical performance a new test must attain to allow better health outcomes than current practice. We classify the proposed patient benefits of a new test into three broad groups and describe how to set minimum clinical performance at the level where the potential harm of false-positive and false-negative results does not outweigh the benefits. (1) For add-on tests proposed to improve disease outcomes by improving detection, define an acceptable trade-off for false-positive versus true-positive results; (2) for triage tests proposed to reduce unnecessary tests and treatment by ruling out disease, define an acceptable risk of false-negatives as a safety threshold; (3) for replacement tests proposed to provide other benefits, or reduce costs, without compromising accuracy, use existing tests to benchmark minimum accuracy levels [Figure 2].

**Figure 2:** Patient benefits of a new test



Researchers can follow these guidelines to focus their study objectives and to define statistical hypotheses and sample size requirements. This way, clinical performance studies will allow conclusions about whether test performance is sufficient for intended use.



#### UPCOMING EFLM EVENTS

## 3<sup>rd</sup> EFLM Strategic Conference: Demand Management

Demand Management is a highly relevant topic for laboratory medicine. Inappropriate test requests lead to the huge waste of human and financial resources which negatively affect laboratory productivity and put patient safety at risk. The conference programme focuses on the growing problem of over- and under-utilization of laboratory tests and how it affects medical decisions and patient safety delivering the latest data on the topic and offering some game-changing solutions.

Do not miss the chance to hear about a truly global perspective of the problem and challenges. You will enjoy the EFLM strategy facing the problem: from the definition of the necessary competences and skills for laboratory professionals, to the practical tools to achieve the goals, reaffirming the pivotal role of Laboratory Medicine in the healthcare process.

**SAVE THE DATE:** 27 - 28 November 2020

Zagreb, The Westin Hotel

Check out the conference website for updates!

<http://www.eflm-strategic-conference.eu/>

#### UPCOMING EFLM EVENTS

## EFLM Webinar: Essential Leadership Management for Laboratory Professionals

by Darko Cerne, Chair of the EFLM WG Distance Education and eLearning

EFLM is happy to remind you that the attendance to the webinars is free of charge and that the recording of the lectures will be available afterwards on at the EFLM e learning platform for those unable to attend.

**Speaker: Sedef Yenice (TR)**

**Moderator: Diler Aslan (TR)**

**Date: 17th December 2019 at 18:00 CET**

Webinar manager: Petros Karkalousos

It has already been well recognized that leadership development is a key element in sustained organizational success and effective leadership is an essential component of all well-functioning clinical laboratories is not controversial. Yet leadership can be an elusive characteristic, and developing leaders to their full potential remains one of the great challenges for organizations today. Despite that, leadership skills are often not formally taught. Instead, people achieve leadership positions and are left to figure out a path forward.

This webinar introduces a framework for the essential skills of laboratory leadership and concentrates on developing the knowledge and abilities to run a laboratory efficiently and effectively by focusing on self-awareness, understanding effective communication, engaging others, being resourceful, developing empathy and emotional intelligence.

After completing this webinar, participants will be able to:

- Identify the traits a leader possesses;
- Describe the essential concepts for effectiveness and personal growth for leadership to be effective; and
- Describe the skills and attributes of good leaders in the clinical laboratory.

#### HOW TO REGISTER

Registration at E-Learning platform.

Did you miss any EFLM webinar?

Do not worry: The recorded version of all EFLM webinars is available here.

#### New posted recorded webinars:

- How should a medical laboratory specialist prepare for accreditation according to the ISO 15189 (Speaker: Diler Aslan, TR)
- EFLM Academy: presentation and benefits (Speaker: Ana-Maria Simundic, HR)

#### PAST EFLM EVENTS

## Report on EFLM Postgraduate Course in Biostatistics, Finland

by Anna Linko-Parvinen, President of Finnish Society of Clinical Chemistry; Outi Itkonen, Vice President of Finnish Society of Clinical Chemistry and Jonna Pelanti, Secretary of Finnish Society of Clinical Chemistry

The Finnish Society of Clinical Chemistry had the privilege of organizing the first EFLM Postgraduate Course on Biostatistics in Laboratory Medicine led by Professor Ana-Maria Simundic and PhD Vanja Radisic Biljak in GLO hotel Art in Helsinki on September 18-19. Altogether 28 participants gathered to learn about distribution types and testing difference in quantitative



and qualitative data as well as in evaluating diagnostic accuracies. The participants were experts in laboratory medicine such as medical specialists and clinical biochemists (13), residents (7), researchers and other biomedical professionals. The course was very interesting and the practices were closely related to everyday work.



The general opinion appeared to be that information from the course was useful and important to all specialists in the medical field. We want to thank EFLM, Ana-Maria and Vanja for the opportunity to organize this course.

## Report on EFLM Postgraduate Course in Biostatistics 2019, Ireland

by Dr David Green, Clinical Biochemist, Mater Misericordiae University Hospital, Dublin

The annual conference of the Association of Clinical Biochemists in Ireland (ACBI) was held at the Radisson Blu hotel in Athlone on the 8th and 9th of November 2019. Those of us attending this year were exceptionally fortunate, in that on the day prior to the conference opening, EFLM president elect Prof. Ana Maria Simundic and her colleague Dr. Vanja Radisic Biljak generously agreed to host a (for many of us, much needed!) training day in biostatistics. I have been subjected to more than a few "statistics courses" in my years as a scientist, most of which were as interesting as white paint and as useful as a carpet fitter's ladder. I was therefore delighted on this occasion to have had any negative expectations quickly subverted by Ana-Maria and Vanja's seemingly unlimited knowledge and refreshing passion for this so often dreaded, yet extremely important topic.

The initial segments of the day included talks by both Ana-Maria and Vanja, and dealt with the necessary theory on a range of topics including: data presentation, assessing data distributions, and how to compare various numerical and qualitative datasets. Both speakers delivered information and answered any and all questions impeccably; an especially impressive feat for two non-native speakers of English (in a room filled with Irish accents no less!). I particularly remember having a sinking feeling inside as they listed the various sins that researchers frequently commit when presenting and comparing data, many of which I remember committing on a regular basis as a PhD student (using too many decimal places for percentage values, and inappropriately using standard error of the mean are the two that come quickest to mind!); and I most assuredly will not be committing again.

My personal favourite section of the course came after lunch, when we got to apply what we had learned throughout the day. We were given a sample data set and a range of scenarios, and for each one, guided by the wisdom (and a very helpful algorithm) shared by our hosts, we worked our way logically through how to best formulate and address each statistical question. As a group we worked through each of the scenarios in real-time using a statistics software package, determining the type of data used, assessing the distribution of the data, choosing the appropriate statistical tests for our dataset, and drawing the appropriate conclusions from the results we generated. I especially found the "learning by repetition" aspect of this section helpful. Any other statistics course I had previously attended had laid out maybe one or two examples at most, and generally did not encourage any hands-on participation. Ana-Maria and Vanja allowed us to participate fully in working through multiple examples and patiently worked through any issues or difficulties anyone had, and did not stop giving us practical examples until the rules were emblazoned in all of our minds.

I personally considered the course to be the highlight of an excellent three days, and greatly hope to have the pleasure of being able to attend more such events in the future; a sentiment I know was echoed by all of my fellow attendees.



### NEWS FROM EFLM NATIONAL SOCIETIES

## Second International Day of Laboratory Medicine in Croatia (LabDay2019)

by Adrijana Dorotić and Tara Rolić, Croatian Society of Medical Biochemistry and Laboratory Medicine (CSMBLM), Committee for Information and Public Relations



International Day of Laboratory Medicine, LabDay2019 was organized by the members of the Croatian Society of Medical Biochemistry and Laboratory Medicine (CSMBLM) for the second time in Croatia. Aim of LabDay2019 was to increase the visibility of medical

biochemistry and laboratory medicine in Croatia and to raise awareness on the important role that medical biochemists and laboratory medicine specialists play in patient care across Croatia as well as worldwide. For CSMBLM, this date has an additional historical significance, since the first medical biochemists meeting in Croatia was held on November 6th, 1951, which was the impetus for the establishment of CSMBLM.

LabDay2019 was held in medical laboratories throughout Croatia on November 5th, 2019. It was imagined as the day that laboratories will open their doors to a wider population and introduce to the people what happens behind closed doors of the laboratory that helps in diagnosis and monitoring of therapy. In total, even 45 volunteer activities were held throughout Croatia, in more than 20 towns. Activities included lectures on importance of patients' preparation for laboratory analysis, lectures on POCT, diabetes mellitus, workshops for preschool children with the aim of reducing children's fear of veinpuncture, visit to the laboratory for elementary and high school students with the aim of motivating students for choosing clinical chemistry for their future profession as well as visit to the laboratory for general population. All activities and program are available on the CSMBLM website and on The International





Laboratory Medicine Day Facebook's page.

Second Croatian LabDay was excellently attended and covered in media. There were several prime-time TV reports on national and local television channels on LabDay, as well as numerous articles on web portals. This is one great example of an activity in which with very little material means, but with great will and enthusiasm from individuals, much can be achieved for the recognition of our profession. CSMBLM finds this kind of promotion excellent and will in the future continue with this type of actions. We are looking forward to the LabDay 2020!



**Figure 1:** Some of the participants of the LabDay2019 in Croatia

## 30<sup>th</sup> Symposium of the Croatian Society of Medical Biochemistry and Laboratory Medicine: vitamin D in health and disease

by Nora Nikolac Gabaj, Department of Clinical Chemistry, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

For the last 30 years, the Croatian Society of Medical Biochemistry and Laboratory Medicine (CSMBLM) organizes an annual symposium on various topics in laboratory medicine. This year, in September, scientific organization was entrusted to Department of Clinical Chemistry, Sestre Milosrdnice University Hospital Center from Zagreb, Croatia. Main topic of the symposium was vitamin D and its role in health and disease. Symposium comprised of 9 lectures, most of them were presented by specialists in laboratory medicine. After an introductory lecture on emerging importance of vitamin D determination, held by Nora Nikolac Gabaj, PhD, Adriana Unic explained its physiological role. Mariana Miler emphasized all preanalytical factors that can influence measurement of vitamin D, while Tomislav Pavic raised an important issue of analytical heterogeneity between methods used for vitamin D measurement. Interesting findings of association of vitamin D and fertility were presented by Ivan Bolanca, MD, while Davorka Herman Mahecic, MD explained a crucial role of vitamin D in diabetes. Lara Milevoj Kopcinovic, PhD, talked about role of vitamin D in immunity and association with lung diseases. Additionally, some potential new applications of vitamin D were discussed, thus Jelena Culej, PhD, presented an overview of extravascular fluids that could serve as a new matrix for vitamin D measurement. Finally, Alen Vrtaric explored genetic variants of vitamin D receptor polymorphisms and their role in rheumatoid diseases. All presentations in \*.pdf are available on the website of the CSMBLM. Symposium was very well attended, 105 of participants were present. Based on the results of follow-up survey, scientific topics, lectures and organization were rated very high.



**Figure 1:** Lecturers of the 30<sup>th</sup> Symposium of the CSMBLM



# 14<sup>th</sup> National Congress of the Czech Society of Clinical Biochemistry with International Participation

by prof. Jaroslav Racek, President of the Czech Society for Clinical Biochemistry (ČSKB), President of the 14<sup>th</sup> Congress of the Czech Society of Clinical Biochemistry

The 14<sup>th</sup> National Congress of the Czech Society of Clinical Biochemistry with International Participation was held under auspices of IFCC and EFLM on 22<sup>nd</sup> – 24<sup>th</sup> September 2019 in Pilsen, the city-center of the West Bohemia. The organizing committee chose six current topics and guarantors of single lecture blocks managed to attract outstanding experts in given problems. Besides clinical chemists the lectures were held by experts in other branches of laboratory medicine and by excellent colleagues from clinical medical disciplines. The lectures were followed by extensive discussion; it was also aroused by other current problems of clinical chemistry in the Czech Republic; to name but a few, we can mention laboratory accreditation, professional education and training in clinical chemistry, personnel problems or updating list of laboratory tests for health insurance companies. The professional program was complemented by 3 plenary lectures of leading experts from the Czech Republic and abroad, by 22 posters and, traditionally, also by an exhibition of 25 companies dealing with laboratory instruments and reagents, and, finally, by numerous workshops. Abstracts of lectures and posters were published in No 3 of *Klinická biochemie a metabolismus*, the official journal of the Czech Society of Clinical Biochemistry.

The congress was opened by a plenary lecture of Professor Jirsa "Hereditary disorders of bile secretion – causes, mechanisms and diagnostics". It was followed by lecture of Professor Matthew J. McQueen (Faculty of Health Sciences, McMaster University, Hamilton, Canada) called "International recommendations for sodium and potassium intake: are they realistic and achievable, and are they grounded in evidence-based clinical outcomes?"; he informed about problems associated with too low or high intake of sodium and low intake of potassium. Professor Antonín Jabor then brought a reflection of relation between people (laboratory workers, clinical colleagues, patients) and clinical biochemistry. The last lecture of the first congress day was presented by Jan Hajšman, an expert in history of Pilsen and in typical dialect spoken in Pilsen; his lecture was called "How to make oneself understood and not to get lost in Pilsen..."

On Monday the congress started with a lecture block describing the role of POCT in laboratory diagnostics; problems of POCT and its relation to central laboratories were discussed. This block was followed by a plenary lecture of Professor Etienne Cavalier (University of Liège, Belgium) "Vitamin D determination: analytical and (some) clinical considerations and perspectives". Professor Cavalier showed both vitamin D metabolism and its disorders and problems of vitamin D determination. The speakers from the next block of lectures informed the congress visitors about new trends in diagnostics, treatment and control of diabetes mellitus. Most of them were our clinical colleagues; clinical chemists had possibility to get information about trends in continuous glucose monitoring and diabetes mellitus treatment. The last block named "Laboratory examinations in pregnancy" focused especially on screening of inborn errors in

pregnancy and early diagnostics of preeclampsia. The second day of the congress was traditionally closed with the plenary meeting of the members of the Czech Society of Clinical Biochemistry and with the meeting of the editorial board of the official journal of our society mentioned above.

The last congress day started by a series of lectures dealing with laboratory examinations in endocrinology; both analytical problems of hormones determination and interpretation of the results were discussed. Speakers of the last block of lectures informed us the recent knowledge in diagnostics of acute coronary syndromes and discussed problems of determination and interpretation of atherogenic lipids levels. On examples of five patients presented with chest pain three experts (cardiologist, clinical chemist and radiologist) illustrated how to diagnose or rule out acute coronary syndrome in these patients. The last congress day finished with case reports, presented especially by young clinical biochemists who showed the significance of laboratory examinations in diagnostics and monitoring of disease course. The congress always represented the opportunity to award the outstanding personalities in clinical chemistry who significantly contributed to an excellent reputation of the Czech Society of Clinical Biochemistry both in our country and abroad. Professor Antonín Jabor was awarded by the highest prize of the Czech Society of Clinical Biochemistry, the Medal of Professor Hořejší. The honorary membership was awarded to Professor Milan Jirsa and Ms. Miroslava Šnajdrová, a representative of medical laboratory technicians. The award for the best paper in clinical chemistry was granted to Professor Viktor Kožich and his co-workers (paper title: "Cystationine  $\beta$ -synthase deficiency: genetics; a chapter in the



**Figure 1:** Professor Matthew J. McQueen during his lecture



**Figure 2:** Members of the ČSKB board discussing during the congress; from the right J. Racek (President), R. Pikner (Vice-President), P. Malina (Scientific Secretary) and M. Verner (chair of the Revision Commission)



Encyclopedia of Life Sciences"). The animation by Professor Jaroslav Racek and Professor Miloš Velemínský, showing principles of intermediary metabolism, was chosen as the best educational publication of the year 2018 in clinical chemistry. The congress became the venue not only for lecture blocks but also for social meetings and informal discussion with colleagues and friends. The social program in the well-known restaurant of the famous brewery Prazdroj with the band Hibaj, contributed to a friendly atmosphere. We believe that the 14<sup>th</sup> "Pilsen" congress will rank among the successful projects of the Czech Society of Clinical Biochemistry and the whole Czech Medical Association.

#### NEWS FROM EFLM NATIONAL SOCIETIES

## Report on the Association of Clinical Biochemists in Ireland 42<sup>nd</sup> Annual Conference - first day

by L Kavanagh; Department of Clinical Chemistry, Mater Misericordiae University Hospital, Dublin, Ireland

### **Friday November 8<sup>th</sup> 2019; session themes: "Data Saves Lives", the Pre-analytical Phase, Other Samples Types and Point of Care Testing**

President of the Association of Clinical Biochemists in Ireland (ACBI) Dr Graham Lee, welcomed delegates from the four corners of Ireland and beyond to their 42nd Annual Conference, which took place in Athlone on the banks of the River Shannon. The conference got off to a lively start with Prof. Thomas MacDonald of the University of Dundee, who issued an appeal to utilise the vast amounts of data that are collected and generated in hospital Laboratory Information Systems. "Data Saves Lives" was the title of his presentation, and Prof. MacDonald cited numerous examples where studies utilising laboratory data have led to changes in public health management, medical interventions and licencing of medicines. Prof. MacDonald suggested that when dealing with patient data, the gate keeping processes such as ethics committee(s) and GDPR legislation (and others) should be streamlined, without compromising ethics and privacy.

Prof. Piero Rinaldo of the Mayo Clinic encouraged us to reconsider how reference intervals are routinely established. He questioned the appropriateness of using normal population data with age and sex specific ranges that are derived using statistical principles, when it comes to assessing a patient's lab results. Prof. Rinaldo showcased "Collaborative Laboratory Interpretive Reports" (CLIR), a web-based computational software that generates continuous moving percentiles using harmonised data. The statistical power of CLIR is dependent on large data sets, so if you are willing and able to share laboratory data, CLIR is free to use at [www.clir.mayo.edu](http://www.clir.mayo.edu).

Prof. Ana-Maria Simundic, President Elect of the EFLM 2020 discussed the work of the EFLM Working Group for the Pre-analytical phase (WG-PRE). Established in 2012, WG-PRE has set out to determine the quality of current pre-analytical practices. They endeavour to improve pre-analytics by: defining best practices, providing guidance, disseminating their findings and recommendations via publications and at educational meetings.

The overall aim of this work is to harmonise pre-analytical practices in Europe, which should lead to improved patient outcomes.

Many of the assays on routine automated chemistry analysers are validated for use with blood and urine. Scientists in the clinical laboratory are often asked to test a variety of other biological fluids, so it falls to the clinical laboratory to verify the suitability of the assay for fluid analysis. Validation is challenging given the heterogeneity of the sample types, sample quality, and volumes. Consultant Clinical Scientist (Clinical Biochemistry) Dr Sally Brady presented a practical approach undertaken by her laboratory, Viapath at Guy's & St. Thomas' Hospital in London, to validate these assays in a way that also satisfies the criteria of the UK accreditation body. Ireland has the highest birth incidence of Cystic Fibrosis (CF) in the world and CF has been part of the disease panel in Ireland's Newborn Screening Programme since 2011. Dr Barry Linnane, Consultant Paediatric Respiratory Consultant at UHL, discussed the tiered approach to identifying CF using bloodspot samples. Early detection of CF in a neonate, before clinical signs and symptoms manifest, can lead to improved outcomes for the infant and family.

Dr Marie Eagleton stayed with the theme of unusual samples types; this time when testing for drugs of abuse and their metabolites. The choice of sample type for drug testing is multifactorial, from issues such as the privacy and dignity of the individual being tested (a salivary test might be preferred over a supervised urine sample!), to the window of detection, biohazard risks, and interfering substances. Testing matrices are wide and varied including hair, nails, sweat and breath.

Friday closed with an interactive session regarding Point of Care Testing (POCT) practises in Irish hospitals. As the consensus of the delegates was established by real time voting, Dr Sean Cunningham and Ms Alison Bransfield discussed the results in the context of current guidelines relating to POCT governance, validation/verification of instruments (including the ubiquitous glucometer), and oversight and responsibility for Quality Control. Sixty-five percent of Irish hospitals have a POCT Committee that approves most or all POCT devices according to delegates. The first day of the conference rounded off nicely with a fantastic dinner, entertainment and some socialising with old friends and new.



## Report on the Association of Clinical Biochemists in Ireland 42<sup>nd</sup> Annual Conference - second day

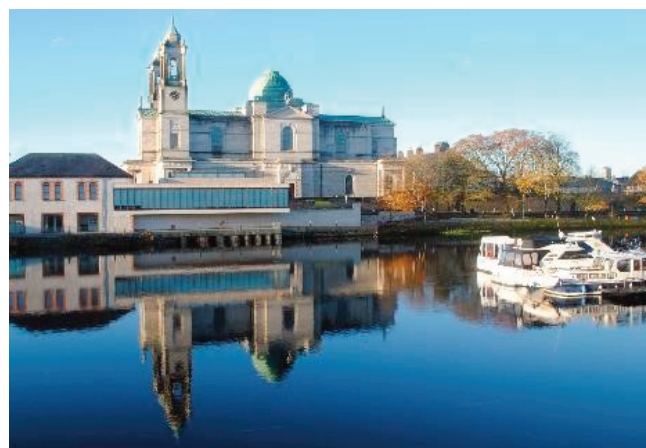
by JLV Reeve; Principal Clinical Biochemist, Department of Clinical Biochemistry, St Vincent's University Hospital, Dublin 4, Ireland

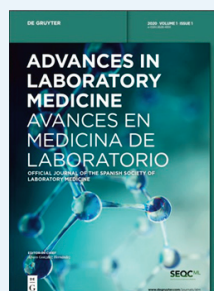
### ***Saturday November 9<sup>th</sup> 2019; session theme "High quality ethically sound clinical research informs best practice"***

Saturday morning opened with a talk from Prof Pat O'Mahony, the CEO of Clinical Research Development Ireland and Chair of the Future Investment in Clinical Research steering committee. This committee aims to enhance clinical research performance and is made up of stakeholders from academia, clinical research facilities, industry and state funding bodies. Ireland performs only 20% of the clinical research it should, despite awareness that clinical research improves patient outcomes and economic prosperity. Following a consultation process with those interested in clinical research the committee conducted a SWOT analysis of written submissions and produced an extensive report (available [here](#)). Emergent themes such as infrastructure needs, regulatory deficits, lack of national coordination, and staffing, to include protected time and on-going funding, were revealed. Critical mass is essential to successful research and Prof O'Mahony encouraged active collaboration between Irish institutions. Introduction of clinical research to hospital managers KPIs would ensure its continued measurement and, therefore, management. Next up was Prof Alison Avenell, Clinical Chair in Health Services Research at the University of Aberdeen and Consultant Clinical Biochemist in Aberdeen Royal Infirmary. This well considered talk focused on improving efficiency in research and reducing the impact of misconduct. In 2018, a blanket Public Health England recommendation was made that people should consider taking 10 µg of vitamin D in the autumn and winter months. This recommendation was dissected with respect to the exponential rise in inappropriate vitamin D requests, the huge variability observed in immunoassays, the lack of consensus on what deficiency is and the paucity of evidence that vitamin D prevents disease, other than rickets/osteomalacia. Prof Avenell highlighted that few funding bodies require or look for systematic reviews of existing evidence or even to register the research. Published reports produced are often on positive findings and may neglect the original question posed if the answer is negative. Poorly designed studies, attention to incorrect outcomes or data missing are also sadly too common. It has been identified that ~2% of researchers admit study data fabrication. Japanese guidelines on vitamin K supplementation were published in 2011. It was determined that research conducted by one centre heavily biased the data to demonstrate a benefit in supplementation. Avenell's group conducted a statistical investigation of all trials emanating from this centre and revealed gross misconduct. Following publication of this statistical review, confessions and retractions ensued. Retraction of falsified reports should impact on guidance but can take time to dilute out. Ideally, an independent body would review such allegations; this entity would be distinct from the publishing journal which has an obvious conflict of interest in such scenarios. Yvette Fitzgerald, the Business Change Manager and Data Protection Officer at the Royal College of Physicians of Ireland, spoke with us on GDPR. As Healthcare Professionals we should work to the mantra that no one will be surprised by or object to the way in which their data is processed in our hands. She emphasised that the goal of GDPR was to provide more control over personal data and to protect our human right to privacy. GDPR is a necessary requirement given the technological

environment we live in and the ease of electronic duplication. An unauthorised disclosure can never be undone and whilst a data breach might not pose an immediate threat it may linger and manifest later following subsequent additional breaches on the same individual. We must limit the risk associated with "big data" collection such that people will opt in and enable the data be used for societal betterment. Unfortunately, GDPR has had a bad image largely due to negative press coverage. Data protection has been around for a long time. GDPR brings powers to Data Protection Commissioners and ensures that the data collectors are more transparent in what they can do with our data. Under GDPR Clinical Audit has suffered most despite being allowed and provided for in the regulations. It has become confused with Clinical Research which falls under the Health Research Regulations and requires consent and Research Ethics Committee approval, in most cases. Ms Fitzgerald encouraged us emphatically to keep auditing. The topic changed in the afternoon to neonatal / paediatric medicine. Dr Edwin Chandrachan, Consultant Obstetrician and Gynaecologist from St George's Hospital, London spoke on the continued use of foetal blood sampling (FBS) in Ireland despite the lack of evidence supporting any improvement in clinical outcomes. He explained why this method, introduced in 1962 Germany, had no anatomical or physiological justification. To replace FBS, he suggested intensive training of staff on infant physiology during labour. Commentary from the audience highlighted the pre-analytical difficulties in collecting such small sample volumes in highly stressed environments. Dr Chandrachan implored that we return with his message to stop FBS to our neonatal hospitals.

The last talk of the session, and indeed the conference, was given by Prof Stephen Kingsmore, President and CEO of Rady Children's Institute for Genomic Medicine in San Diego. Prof Kingsmore spoke on transforming paediatric outcomes by using ultra-rapid whole genome sequencing. He provided the example of an 8 day old infant presenting with status epilepticus to the ED. He emphasised the difference between protocol-directed medicine and precision medicine in managing such a patient and determining the best treatment option. Prof Kingsmore described the 19 hour protocol used at their facility from the initial request for genome sequencing through to the signing out and reporting of results. The phenotype / clinical detail, extracted from the electronic record using automated natural language processing, is combined with the genotype to inform the diagnosis. Such rapid genome sequencing aims to provide an accurate diagnosis to the very sick before end organ damage or in the more stable patient before they are discharged home. To translate rapid precision medicine from research mode to the standard of care setting will require a real shift in healthcare paradigm. Stumbling blocks will be reimbursement and healthcare professional buy-in.





facilitate the dissemination of scientific works related to Laboratory Medicine, especially with regard to the development and interpretation of analytical tests. The founding of the journal was inspired by previous journals published by the SEQC<sup>ML</sup>, some in conjunction with other scientific societies. The editors of these previous journals deserve special recognition for their selfless dedication to their development.

Based on previous experience, Adv Med Lab was born with a renewed spirit to be a journal of international prestige at the service of the scientific community.

Within the interest of promoting the dissemination of research, Adv Med Lab has chosen a different approach with respect to other journals, such as Open Access and being Spanish-English bilingual. At the same time, articles will be accepted based on peer review and with special attention to ethical aspects. In addition, Adv Med Lab was founded with the aspiration of being indexed in the main databases, especially those that use bibliometric indexes to evaluate the scientific quality of papers and journals. An example of these is the well-known Journal Citation Reports, which evaluates the world's leading journals using the "Impact Factor" indicator. Obtaining this indexing is a difficult task that requires time and work, but is necessary to achieving maximum recognition and visibility.

Access to the information in a scientific journal traditionally involves a subscription cost, in both paper and electronic formats. Consequently, it is a limitation for many researchers and professionals to know of these published papers if they do not have the corresponding subscription. Faced with this, the Open Access movement has emerged, which promotes the free availability of scientific literature through the Internet, so that any user has free access to the article and, consequently, the author achieves greater dissemination of their research. Based on the philosophy of achieving maximum dissemination of its content, Adv Lab Med has chosen to be an electronic journal, bypassing the paper format, and Open Access. There are several Open Access models, but initially the most extensive one has been chosen, in which the entire cost of the publication process is assumed by the SEQC<sup>ML</sup>, being free for both the reader and the author. This is an important difference from other Open Access journals, in which the author assumes the publication price, which usually ranges from around € 500-3,000.

It is well known that the universal language of science is English. However, the difficulty of writing science in English sometimes limits Spanish speakers when publishing their work in international journals. Therefore, Adv Lab Med has decided on a Spanish-English bilingual edition, translating the articles into the other language once accepted. In this way, it intends to prevent a good project from not reaching the dissemination it deserves for linguistic reasons. At the same time, keeping both versions allows it to reach a wider audience. With this commitment to a bilingual journal, it follows the example of other prestigious Spanish journals such as *Emergencias*, or the *Spanish Journal of Cardiology*. It is obvious that this involves an additional effort for the magazine, but we believe that it is amply compensated by the service provided to Spanish-speaking authors.

Peer review is essential to maintaining the quality of a scientific journal. The reviewers deserve special thanks, since they dedicate unrecognized and unpaid time to the evaluation of the work. As it cannot be otherwise, the acceptance of works by Adv Lab Med is based on this process, in which each submission is evaluated by several reviewers. These, as experts, examine the manuscript submitted for publication independently and critically. Being a



## Advances in Laboratory Medicine, the new journal of the SEQC<sup>ML</sup>

by Dr. Álvaro González Hernández, Editor-in-Chief of the Adv Med Lab journal



Research is made known to the rest of the scientific community through the publication of articles in journals seeking to reach as many readers as possible.

Recently, the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>) launched a new journal, called *Avances en Medicina de Laboratorio -Advances in Laboratory Medicine (Adv Med Lab)* to



reviewer means recognition as a specialist in that area of knowledge and implies a responsibility to evaluate the merit of the work submitted by making constructive comments within a reasonable timeframe. On the other hand, the reviewer must be aware of the possibility of conflicts of interest and must reject the review of those manuscripts in which such conflict may arise, communicating this to the editor.

Adv Lab Med journal will be attentive to the various ethical aspects that may affect the quality of the published results. Within the commitment to offer readers novel and original information, plagiarism and works whose relevant results have been previously published will be monitored. It will be especially important that manuscripts containing results obtained from people clearly indicate that the work has been approved by the corresponding Ethics Committee and that the subjects of the study have signed the corresponding informed consent, if necessary. Any conflict of interest that is relevant to the published research should also be indicated. An example of a conflict of interest would be the financing of a trip or congress by the industry involved in the work. In short, Adv Med Lab was born with the intention of being an important journal from a scientific point of view. The new journal was introduced in May in Barcelona at the EuroMedLab 2019 congress where it was well received. We hope that this project, which is being developed with great enthusiasm and hard work, will please everyone and serve as a channel for scientific dissemination of research in the Clinical Laboratory field.

#### **Presentation of the journal at the EuroMedLab 2019 congress in Barcelona**

For more information about the new journal, consult the following link by De Gruyter.

## SEQC<sup>ML</sup> participates in Latin American Congress of Clinical Biochemistry for the first time

by Josefina Mora, Executive Secretary of SEQCML Board



COLABIOCLI



- Specifically, it has collaborated in 2 complete symposia (POCT and Accreditation) and also in several talks on Neonatal Screening and Education

- The SEQC<sup>ML</sup> has agreements with various societies and the next challenge will be for Latin American professionals to begin to participate directly in some work groups and commissions and feel active and recognized in the Society

On September 11, 12, and 13, the XXIV Latin American Congress of Clinical Biochemistry, the most important scientific event in this region in the Clinical Laboratory field, took place in Panama. Held biennially, it is organized by the Latin American Confederation of Clinical Biochemistry - which includes 21 countries - and offers an extensive scientific program with conferences, symposia, and courses in the various current core thematic areas of interest to all Clinical Laboratory professionals nationally and internationally.

For the first time, the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>) has participated in this Congress. This represented a key opportunity to strengthen collaboration with Latin American countries, a strategic objective for the SEQC<sup>ML</sup>.

Specifically, it collaborated in 2 complete symposia (POCT and Accreditation) and also in other talks in Neonatal Screening and Education. In total it was represented by 5 SEQC<sup>ML</sup> members and 7 presentations.

Doctors Imma Caballé, president of the SEQC<sup>ML</sup>, and José Ángel Cocho, member of the Board of Directors, summarize the presence of the Society in the Congress and its importance.

#### **Assessment of the presence of the SEQC<sup>ML</sup> in the Congress**

This is the first time we went in the name of the SEQC<sup>ML</sup>, although previously there had been collaborations at an individual level. This participation is the result of the acceptance in 2017 of the Society as an associate member of COLABIOCLI.

We believe that the presence of Spanish experts is important because collaboration with Latin American countries is a strategic objective for the SEQC<sup>ML</sup>. It is a geographical area where we believe that we can find professional groups with which to make advances in Laboratory Medicine. We also believe a lot of work carried out here over the years and through our different committees and commissions (scientific, quality, education, etc.) can be of great use to them.

We have created a demanding plan for ourselves, and one which we believe to be generous towards COLABIOCLI, by participating in several symposia and financing almost all of our participation. On this occasion we collaborated in 2 complete symposia (POCT and Accreditation) and also various talks on Neonatal Screening and Education.

#### **Topics and main news of the Congress**

We believe that everything related to Laboratory Quality and Accreditation is important, which is why we collaborate on it. In addition, it is worth mentioning the symposiums in which we participated, such as POCT, Neonatal Screening, and Professional Training in different countries.

We would also like to highlight the AEFA symposium on Fertility Preservation and the IFCC Symposium on Quality in Molecular Biology.

#### **Importance of sharing knowledge with experts from other countries, in this case from Latin America**

We believe that this gives the SEQC<sup>ML</sup> a greater international projection given the fact of having a common language.

We already have this through our participation in working groups of the EFLM and IFCC, and we believe that we can work here in a more broad-based way and on some issues from a position of co-leadership with several of the member countries of the COLABIOCLI.

The SEQC<sup>ML</sup> as a Spanish representative in international organizations such as the IFCC and EFLM acts as a unifying bridge with Latin American countries.

In other cases it responds to the SEQC<sup>ML</sup>'s supportive approach, since in the smaller countries the scientific societies have more difficulties.

#### **Key points of the symposium "The laboratory as a fundamental pillar of Point-of-Care Testing (POCT)", in which the SEQC<sup>ML</sup> participated on Thursday, September 12**

This symposium was organized entirely by experts from SEQC<sup>ML</sup>, Dr. Paloma Oliver and Dr. Antonio Buño.

In their discourse, they discussed topics such as: What do we mean by POCT? Where can we use it? What is the evidence of the benefits of POCT for the patient? They also discussed the main activities of the SEQC<sup>ML</sup> POCT Commission.

#### **Regarding the "Laboratory accreditation" symposium on Friday, September 13**

The Society participated in three talks. The first, by Dr. Francisco Bernabeu, addressed how the Accreditation 15189 and 22870 process for Clinical Laboratories is carried out in Spain and in other European countries, and at what point it finds itself.

The second, given by Dr. Imma Caballé, dealt with Accreditation in a multidisciplinary and high-volume laboratory, and in the third, Dr. José Ángel Cocho presented the topic of Accreditation in a specialized laboratory.

The SEQC<sup>ML</sup> is a fundamental agent in both training and external quality control programs and collaborates very closely with ENAC (National Accreditation Entity). We believe that it has room for growth within some COLABIOCLI countries and we would like to work with them very directly.



## NEWS FROM EFLM NATIONAL SOCIETIES

# Conference on the Future of Laboratory Medicine, organized by the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>)

by Josefina Mora, Executive Secretary of SEQCML Board

The SEQC<sup>ML</sup>, in Zaragoza, addresses the changing model facing Laboratory Medicine, during a conference in which professionals were the protagonists

- Topics such as the application of big data to Laboratory Medicine, talent management, and resident training were addressed
- One hundred people attended the sessions, between SEQC<sup>ML</sup> members and representatives of the Administration and the in vitro diagnostic industry
- Another of the objectives of the conference was to promote and stimulate collaboration with other scientific societies

**Zaragoza, October 21, 2019** - Laboratory Medicine, which plays an essential role in the healthcare process, has been facing a process of paradigm change in recent years, derived from the incorporation of new technologies. These technical advances imply great possibilities for improvements that benefit patients, but also make it necessary for clinical laboratory professionals to update their knowledge and management models. In order to help these professionals update their knowledge, the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>) recently organized a Conference on the Future of Laboratory Medicine. The event, which took place in Zaragoza, served to strengthen reflection and debate on the Laboratory Medicine's current situation, strategic outlook, and its future projection.

More than a hundred people, the majority of them members of the SEQC<sup>ML</sup>, together with representatives from the Administration, from the in vitro diagnostic industry, and from scientific societies in the healthcare field, participated in the sessions that addressed topics such as the application of big data to Laboratory Medicine, talent management, and resident training in the face of the challenge of unifying the Clinical Analysis and Clinical Biochemistry specialties.

### Big data applied to Laboratory Medicine

One of the central issues of the conference was that of technological developments and how advances such as big



**Figure:** Figure. Drs. Francisco Bernabeu, Imma Caballé, Antonio Buño, Paloma Oliver and José Ángel Cocho represented the SEQC<sup>ML</sup> in the Congress

data can influence the way patients' clinical data are collected and managed. "Currently, laboratories already process large amounts of data and it can be said that, quantitatively, they are the main data producers and processors in health organizations," said Dr. Fernando Cava, Director of Laboratorios Unilabs-BR Salud, who indicated that the greatest impact of technologies such as big data lies in the possibility of finding hidden information, combining massive data from different sources to obtain relevant information for the patient. As explained by Dr. Cava, "the more information we can associate with the patient, the greater the ability to obtain knowledge and beneficial results for the patient and the population in general." "In this sense, laboratories and their professionals should play a significant role," he added.

### Talent management

In this fast-changing environment, Laboratory Medicine must redefine its position, not only acting in its classic role as a provider of laboratory results, but also adopting new roles and responsibilities in the clinical dialogue with patients and doctors. All this will entail "new responsibilities and ethical and legal issues", according to Dr. José Puzo, Head of the Clinical Analysis and Biochemistry Service of the San Jorge University Hospital (Huesca), who during the conference coordinated the session entitled 'The role of the Laboratory Medicine specialist in the laboratory of the future: classic and new skills, abilities, and responsibilities'.

"Our role in health services is and will be increasingly complex. We work with people, technology, processes, and systems. We have to be leaders and team members," summed up Dr. Puzo, in relation to the need for better management of talent and laboratory teams. The specialist also pointed out some of the future trends that will reduce hospital visits, such as virtual inter-consultation, day hospital, or home hospitalization, which will be a challenge for laboratory professionals. "'De-localized medicine' presents us with the need to obtain analytical tests outside the conventional healthcare environment and ensure fast, reliable, and safe results," he said.

### The future of training in Laboratory Medicine

The Conference on the Future of Laboratory Medicine was also aimed at contributing to reducing a certain sense of uncertainty that exists in the Clinical Laboratory field after the unification of the specialties of Clinical Analysis and Clinical Biochemistry was canceled following the repeal of the Royal





**Figure:** Participants in the Conference on the Future of Laboratory Medicine

have occurred in a good part of the laboratories of the country have been an additional challenge for both the training of residents and for professional development.

#### **Collaboration with other scientific societies**

One of the objectives of this conference was to promote and stimulate collaboration with other medical scientific societies, in order to highlight the value of Laboratory Medicine. "We want to be the engine of change of the Clinical Laboratory model; so that, guaranteeing the quality of the results and the sustainability of the system, we can provide the value that both the patient and society need," said Dr. Isabel Llompart, regional coordinator of the Balearic Laboratories Network and Head of the Clinical Analysis Service of the Son Espases Hospital, who coordinated a session focused on collaboration with other scientific societies.

Among the issues that were brought up, the following topics, among others, were addressed: how to facilitate the exchange of scientific information; establish consensus protocols for the diagnosis, prognosis, and monitoring of patients; promote studies that help define the value of the implementation of analytical tests in the health of the population, and establish areas of collaboration in the area of training.

For more information on SEQC<sup>ML</sup> visit [www.seqc.es](http://www.seqc.es)

#### **NEWS FROM EFLM NATIONAL SOCIETIES**

## Join us at our innovative, cutting-edge conferences for clinical scientists

The Association of Clinical Biochemistry and Laboratory Medicine (ACB) is holding two key events in 2020 for clinical scientists. We are delighted to invite members of the European Federation of Clinical Chemistry and Laboratory Medicine to join us for exciting debates and discussions on current and future developments in our field.

*"Completely exceeded expectations"* – delegate feedback from FiLM 2019

*"Truly eye-opening"* – delegate feedback from Focus 2019

#### **Frontiers in Laboratory Medicine 2020 - FiLM 2020: Innovating Pathology**

28-29 January 2020, Birmingham, UK



FiLM 2020 is the essential two-day meeting for current and future leaders in laboratory medicine across all Pathology disciplines. This cutting edge conference brings together the leading figures in Pathology and Diagnostics from the UK and across the world. Speakers include Bill Morice, Prof of Laboratory Medicine and Pathology at the Mayo Clinic in

Decree that implemented the core subject training system. As the Ministry of Health has stated its intention to resume the merger of the two specialties, the conference hosted a session entitled 'Resident training in the specialty of Laboratory Medicine. Specialty program in the core subject' in which it sought to get a head start on what could be the resident training program in the new and unified specialty. This was presented in relation to the other issues discussed in the Conference, technological advances and changes in personnel management.

"The current programs of the Clinical Analysis and Clinical Biochemistry specialties have become somewhat obsolete. Continuous technological changes and the new advances in scientific knowledge itself make an exhaustive revision of them necessary, adapting them to the current reality", explained Dr. Josep Lluís Bedini, Head of the Operational Area of the Hospital Clínic de Barcelona and coordinator of the session, who stressed that the organizational changes that

Minnesota, Jo Martin, President, Royal College of Pathologists and David Wells, Head of Pathology Consolidation, NHS Improvement. The programme offers opportunity to debate and exchange ideas on topical issues that will shape the future of pathology. Delegates will come away with innovative and up-to date-ideas to introduce into their own organisations for improved patient care.

Register by 31 December 2019 for Early Bird Rates: [www.acb.org.uk/film](http://www.acb.org.uk/film)

Follow on Twitter: #acbfilm2020

#### **Focus 2020: Vision for the Future**

13-15 May 2020, Belfast, UK



Focus is the national meeting of the ACB and a great way to get to know clinical scientists from all areas of Pathology. The 'Vision for the future' theme will see debates and discussions on big data, pregnancy and paediatrics, point of care testing and laboratory science of the future.

More information coming soon at [www.acbfocus.org.uk](http://www.acbfocus.org.uk)

Follow on Twitter: #acbfocus2020

We look forward to seeing you at FiLM or Focus in 2020! Please get in touch via [enquiries@acb.org.uk](mailto:enquiries@acb.org.uk) for further information.



## IFCC NEWS

Dear colleagues, in the IFCC Corner you will find information about IFCC educational programs for young scientists, along with the presentation on the VLP Visiting Lecturer Programme. Achievements of the great groups rewarded by Univants follow. For more news subscribe to the IFCC eNews, sending an email to [ifcc@ifcc.org](mailto:ifcc@ifcc.org). Warm regards, Katherina Psarra, eNews Editor

### IFCC Professional Exchange Programs-Unique Opportunity for Young Scientists

by Ann M. Gronowski, Ph.D., IFCC EB Professor Pathology & Immunology and Obstetrics & Gynecology, Washington University School of Medicine St. Louis, MO-US

Did you know that the IFCC offers professional exchange scholarships each year to young scientists?

The purpose of professional exchange programs is to:

- Promote international co-operation between laboratories
- Facilitate the exchange of young laboratory scientists between IFCC Member societies
- Share high level scientific or management skills
- Introduce new or improved scientific or management skills to the applicant's laboratory

There are two types of exchange programs: Professional Scientific Exchange Program (PSEP) and Professional Management Exchange Program (PMEP). Read more here.

### The Journal of the IFCC

eJIFCC 2019, Vol 3. is now available. In this issue: Recommendations on measurement units– why and how, an article on behalf of the

The Journal of the International Federation of Clinical Chemistry  
and Laboratory Medicine



IFCC-IUPAC Committee on Nomenclature for Properties and Units (C-NPU). Among other articles: Evaluation of visual serum indices measurements and potential false result risks in routine clinical chemistry tests in Addis Ababa, Ethiopia; Best practices in the implementation of a point of care testing program: experience from a tertiary care hospital in a developing country; and Prevalence of liver function test abnormality and associated factors in type 2 diabetes mellitus: a comparative cross-sectional study. A Case Report and a Letter to the Editor complete the issue. Read More



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### IFCC-Task Force for Young Scientists (TF-YS)

#### Lab-surfing: Connecting Young scientists

by Santiago Fares Taie (AR) Core-Member IFCC TFYS

Three years ago, the IFCC TF-YS launched a programme called **Lab-Surfing.com** with the main goal of improving communication among young scientists from all around the world. Information & Communication Technologies (ICT) are tools that young scientists can easily learn and control. Since Lab-Surfing.com was launched, many young scientists had the opportunity to improve networking and cooperation among colleagues, specially making exchange programs easier. Today, 715 young colleagues from 70 countries and a median age of 32 years old form the Lab-Surfing community. To know more click here.



## The UNIVANTS of Healthcare Excellence Program reveals 'Best in Europe' Opportunity for 2020

Since 2018, the UNIVANTS of Healthcare Excellence Program has been inspiring integrated clinical care teams to submit best practices to [www.UnivantsHCE.com](http://www.UnivantsHCE.com) for recognition associated with measurably better healthcare. Inaugural winners for 2019 were announced earlier this year (Click here for announcement) and have been widely promoted across the globe as an inspiration to other healthcare professionals who have yet begun to leverage laboratory medicine in avant-garde ways to advance patient care, while also achieving measurable benefits to clinicians, payors, and entire health systems.

Seven leading healthcare organizations including IFCC, AACC, Modern Healthcare, EHMA, HIMSS, NAHQ, and IHE have spearheaded the program in partnership with Abbott Diagnostics to promote the power of UNITY across healthcare disciplines and transform care delivery through teamwork, novel thinking and insights associated with laboratory medicine. The current application cycle for the 2020 winners has begun with a submission deadline of February 28, 2020 for interested applicants.

In the meantime, the 8 program partners and healthcare giants have raised the bar for 2020 with new opportunities for integrated clinical care teams to achieve additional recognition for achievements in healthcare excellence. Five new categories were announced this month to recognize the highest ranked applications from key regions including Europe. This "Best in Europe" Award joins 4 other regional categories for 2020 (Best of Asia Pacific, Best of Latin America and Caribbean, Best of North America, and Best of Middle East and Africa). These new categories are supplemental to global recognition of distinction and/or achievement as well as the highest and most prestigious honor among them all, UNIVANTS of Healthcare Excellence WINNER, which is offered to 3 integrated clinical care teams each year, regardless of region.

The new award categories are expected to inspire more applicants for 2020 while offering more opportunities for recognition. Laboratory Medicine is an essential asset to advancing healthcare and care teams who achieve measurable better healthcare excellence deserve recognition for the impact they create for patients, payors, clinicians and entire health systems.

For more details about the award or winning best practices, visit the program website at [www.UnivantsHCE.com](http://www.UnivantsHCE.com).

## IFCC Travel Scholarship for Young Scientists to attend the 6<sup>th</sup> Regional AFCC Conference held in Marrakech

- Eliane Zgheib; Lebanon [Lebanese Society of Clinical Biology / Syndicat des Biologistes du Liban]
- Idris Yahaya Mohammed; Nigeria [Association of Clinical Chemists Nigeria (ACCN)]
- Lucius Chidiebere Imoh; Nigeria [Association of Clinical Chemists Nigeria (ACCN)]
- Dineo Valencia Mabuza; South Africa [South African Association of Clinical Biochemistry (SAACB)]
- Mutale Mubanga; Zambia [Biomedical Society of Zambia (BSZ)]

## Calendar of EFLM events and events under EFLM auspices

Do not miss the opportunity to have your event listed here. **Apply for EFLM auspices!** For more information visit: <https://www.eflm.eu/site/page/a/1048/> or email [eflm@eflm.eu](mailto:eflm@eflm.eu)

### Journées de biologie praticienne

Paris (FR), 7-8 December 2019

[Click here for information](#)

### International Congress on Quality in Laboratory Medicine

Helsinki (FI), 6-7 February 2020

[Click here for information](#)

### 3<sup>rd</sup> Conference on Medical Laboratory Accreditation and Quality Systems (CLAQ) "Lab medicine in the transformative decade: digital technologies, artificial intelligence and quality management"

Belgrade (SRB), 9-10 December 2019

[Click here for information](#)

### EFLM Postgraduate Course on Biostatistics in Laboratory Medicine in collaboration with the Royal Belgian Society of Laboratory Medicine

Bruxelles (BE), 26-27 February 2020

[Click here for information](#)

### TBS Academy Biostatistics Course for Medical Laboratory Specialists

Izmir (TR), 13-14 December 2019

[Click here for information](#)

### 42<sup>nd</sup> LABAC Conference "First international conference on in vitro hemolysis"

Paris (FR), 25 March 2020

[Click here for information](#)

### EFLM webinar: Essential Leadership Management for Laboratory Professionals

on-line, 17 December 2019

[Click here for information](#)

### 13<sup>th</sup> International & 18<sup>th</sup> National Congress on Quality Improvement in Clinical Laboratories

Tehran (IR), 15-18 April 2020

[Click here for information](#)

**15<sup>th</sup> Baltic Congress of Laboratory Medicine**

Riga, 14-16 May 2020

[Click here for information](#)**3<sup>rd</sup> EFLM Strategic Conference "Demand Management"**

Zagreb (HR), 27-28 November 2020

[Click here for information](#)**XXXVII Nordic Congress in Medical Biochemistry**

Trondheim (NO), 9-12 June 2020

[Click here for information](#)**EuroMedLab 2021 - 24<sup>th</sup> IFCC-EFLM European Congress of Clinical Chemistry and Laboratory Medicine**

Munich (DE), 16-20 May 2021

[Click here for information](#)**XXII Serbian Congress of Medical Biochemistry and Laboratory Medicine and 16th Belgrade Symposium for Balkan Region**

Belgrade (SRB), 23-25 September 2020

[Click here for information](#)**8<sup>th</sup> International Symposium on Critical Care Testing and Blood Gases**

Biarritz (FR), 10-11 June 2021

[Click here for information](#)**The 10<sup>th</sup> Santorini Conference "Systems medicine and personalised health & therapy" - The odyssey from hope to practice: Patient first - Keeps Ithaca always in your mind**

Santorini (GR), 28 September - 1 October 2020

[Click here for information](#)

***Wishing you Happy Holidays and best wishes  
for a healthy and prosperous New Year***

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**EuroLabNews** is the digital bi-monthly newsletter of EFLM targeting more than 4,500 laboratory medicine professionals and is also published on the EFLM website. The Newsletter features information on EFLM initiatives and activities of its functional units, news from EFLM National Society members and includes a calendar of the major events in the Clinical Chemistry and Laboratory Medicine field.

	1 issue	6 issues
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Half a page	1000 €	4000 €

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