Education in Clinical Chemistry and Laboratory Medicine
EFCC Symposium

Prague • March 17 – 19, 2012

PROGRAMME AND ABSTRACT BOOK
Education in Clinical Chemistry and Laboratory Medicine

EFCC Symposium

Prague, Czech Republic
March 17 – 19, 2012

Programme
Abstracts
Dear colleagues,

We cordially welcome all participants of EFCC Conference – Education in Clinical Chemistry and Laboratory Medicine organized by EFCC in cooperation with the Czech Society for Clinical Biochemistry, EC4 and the European Union of Medical Specialists. The conference will consist of situation report in Europe in different areas of education from pregraduate to continual education for medical and non-medical specialists. The programme focuses on three main areas – specialization in our profession and different schemes in Europe, pregraduate and postgraduate education in clinical chemistry and laboratory medicine and continuous education and credit systems.

The Czech Society for Clinical Biochemistry, organizer of the Conference was established on April 24, 1959 and has been member of IFCC and EFCC. We hosted in Prague Euromedlab 2001 and the FESCC Symposium 2004 focused on postgraduate education.

We believe that the round table discussions carried out in open and friendly atmosphere with participation of key players in education will find the consensus on all types of education in clinical chemistry and laboratory medicine.

Tomáš Zima  
Conference chair
Local Organizing Committee

Prof. Tomáš Zima, MD, DSc – chair
Dr. Hana Benáková, MBA
Prof. Milan Dastych, PhD, MBA
Zina Pecková
Prof. Richard Průša, MD, PhD
Prof. Jaroslav Racek, MD, DSc
Prof. Petr Schneiderka, PhD
Ing. Jaroslava Vávrová, PhD
**REGISTRATION DESK / VENUE**

Institute for History of Medicine and Foreign Languages and First Faculty of Medicine, Charles University in Prague
U Nemocnice 4
Prague 2
Czech Republic

**REGISTRATION HOURS:**

- Saturday, March 17: 10:00 – 20:00
- Sunday, March 18: 08:00 – 18:00
- Monday, March 19: 08:00 – 12:30

**SYMPOSIUM SECRETARIAT**

Congress Business Travel Ltd.
Lidická 43/66
150 00 Prague 5
Czech Republic

Telephone: office +420 224 942 575
Fax: office +420 224 942 550
E-mail: education2012@cbttravel.cz

**REGISTRATION DESK**

(Emergency numbers)

Lenka Parobkova +420 725 837 430
Zina Peckova +420 606 918 277

**REGISTRATION FOR PARTICIPANTS INCLUDES:**

- Admission to the scientific sessions
- Symposium materials
- Symposium badge
- Refreshment served during coffee breaks
- Lunch on Sunday
- Get together buffet dinner and concert on Saturday
- Symposium dinner on Sunday
**Saturday, March 17, 2012**

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<td>Simone Zerah: The European Directive on professional qualifications; Common-Platforms and the propositions of “Specialists in Laboratory Medicine”</td>
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<td>Augusto Machado: Laboratory Medicine Physician Specialists Education in Europe – diversity and harmonization</td>
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<td>Tomáš Zima: Pregraduate and postgraduate education</td>
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<td>Joris Delanghe: The education system in Belgium</td>
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<td>Grazyna Odrowąż-Sypniewska: Laboratory medicine as a profession and medical science</td>
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Sunday, March 18, 2012

08:00 – 18:00  REGISTRATION

LECTURE HALL A

Chair: Tomáš Zima, Gerhard Zlabinger

09:00 – 09:20   Pirkko Vihko: Contents and goals of specialist education for MD and scientists specialising in laboratory medicine

09:20 – 09:40   Karmela Barisic: Graduate and postgraduate education of medical biochemists at the University of Zagreb Faculty of Pharmacy and Biochemistry

09:40 – 10:00   Ludo Marcelis: The role of the polyvalent medical doctor in the laboratory

10:00 – 10:20  Patrick Twomey: Clinical Biochemists: The UK experience

10:20 – 10:40  Discussion

10:40 – 11:00  COFFEE BREAK (room D)

LECTURE HALL A

Chair: Simone Zerah, Augusto Machado

11:00 – 11:30   Bernard Maillet: The harmonization of CME CPD in Europe for all health care professionals

11:30 – 12:00   Rob Jansen: The EC4 European Register and the Syllabus for Specialists in Laboratory Medicine

12:00 – 12:20  Wytze Oosterhuis: Can we harmonize laboratory medicine in Europe?

12:20 – 12:40  Discussion

12:40 – 14:30  LUNCH

LECTURE HALL A – WORKING GROUP 1

Moderators: Simone Zerah, Gerhard Zlabinger, Rob Jansen, Lena Norlund

14:30 – 16:00   Specialization and different schemes in Europe – compensate the differences of curriculum – core curriculum

LECTURE HALL B – WORKING GROUP 2

Moderators: Damien Gruson, Bernard Maillet

14:30 – 16:00   Credits of CPD – EFCC
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19:00 – 21:30 | SYMPOSIUM DINNER |
Monday, March 19, 2012

08:00 – 12:30  REGISTRATION

LECTURE HALL A

Chair: Elizabeta Topic, Lena Norlund

08:30 – 08:50  Elizabeta Topic: An overview of the CPD credit system in EFCC societies
08:50 – 09:10  Lance Sandle: Dilemmas in CPD accreditation
09:10 – 09:30  Damien Gruson: The EFCC e-learning program

FREE COMMUNICATIONS
Chair: Elizabeta Topic, Lena Norlund

09:30 – 09:40  Marie Karlíková: Education on imunoanalysis in biomedical research
09:40 – 09:50  Petr Kocna: Experiences with e-learning and distant education of clinical chemistry at 1st Medical Faculty of Charles University
09:50 – 10:00  Daniel Rajdl: E-learning in laboratory medicine – presentation of 3 projects from Czech Republic
10:00 – 10:10  Irina Shabalova: Postgraduated education on cytopathology as a subspeciality of laboratory medicine in Russia
10:10 – 10:20  Tatiana Vavilova: Continuous education in laboratory medicine – from medical student to laboratory doctor
10:20 – 10:30  Tatiana Vavilova: Experience of education course: Coagulation disorders in clinical and laboratory aspects
10:30 – 10:45  Discussion
10:45 – 11:05  COFFEE BREAK (room D)

LECTURE HALL A

11:05 – 12:30

CONCLUSION REPORTS: WG 1, WG 2, WG 3
Chair: Simone Zerah, Bernard Maillet, Victor Blaton

CLOSING REMARKS
Chair: Ian Watson, Augusto Machado, Tomáš Zima
GET TOGETHER BUFFET DINNER

Saturday, March 17
18:30 – 20:00
Included in the registration fee.

Buffet dinner will be served in room D (coffee break room) at the symposium venue.

CONCERT – SAINT CATHERINE CHURCH

Saturday, March 17
20:30 – 21:00
Included in the registration fee.

At 20:15 we meet at the symposium venue (in front of the building) and walk together

At 20:15 we meet at the symposium venue (in front of the building) and walk together to the St. Catherine church which is only 5 minute walk from the symposium venue.

Hot drink will be served after the concert in front of the church.

Church of St. Catherine
Performers: Josef Zámečník (trumpet) and Jan Kalfus (organ)

Church of St. Catherine is a significant dominant feature of the upper part of Prague’s New Town. The original Gothic church was built between 1355 and 1367, on the behest of Charles IV. Later on the church acquired Baroque appearance which has been preserved until today. The steeple of the St. Catherine church, called the “Prague Minaret”, is 51.3 m high. It has five floors. The lower floors have Baroque windows and these of upper floors are Gothic. The steeple is covered by an octahedral pyramidal roof with finial and a cross at the top. The church was consecrated in 1950 and the “Museum of Prague Capital” established a sculpture depository here. In the 1960s this depository was even opened to the public for about 10 years.

LUNCH

Sunday, March 18
12:40 – 14:30
Included in the registration fee.

Lunch will be served in restaurant u Emy Destinnové, Kateřinská 7, Prague 2.
Please present your lunch voucher to the staff.
Restaurant is situated only 150 meters from the symposium venue.

SYMPOSIUM DINNER

Sunday, March 18
19:00 – 21:30
Included in the registration fee.

Dinner will be served in restaurant Novoměstský pivovar, Vodičkova 20, Prague 1.
Please present your ticket at the entrance to the restaurant to our hostesses.
Restaurant is within walking distance from the symposium venue (10 minutes).
LOCATION MAP

1 Symposium venue
2 Church of St. Catherine (concert)
3 Restaurant U Emy Destinnové (lunch)
4 Hotel 1. Republic
5 Hotel Novotel
6 Hotel Ibis
7 Hotel Tchaikovsky
8 Novoměstský pivovar (dinner)
Graduate and postgraduate programmes for masters of medical biochemistry at the Faculty of Pharmacy and Biochemistry, University of Zagreb, reflect the multidisciplinary character of the profession, necessary for application of scientific findings in the field of medical biochemistry in different work settings. The programs cover integrated undergraduate and graduate studies, postgraduate doctoral studies and several postgraduate specialist studies. Medical biochemistry studies are organized as an integrated undergraduate and graduate course of studies extending over ten semesters (5 years, 300 ECTS), and leading to the title Master of Medical Biochemistry. The aim of the curriculum is to educate health professionals capable of critical thinking and active and permanent acquisition of knowledge. During the course of studies, students acquire knowledge, understanding, skills of analysis and synthesis in fundamental natural, biomedical and professional medical-biochemical sciences as well as generic competencies and attitudes. Postgraduate doctoral studies last at least 3 years and students have to collect a minimum of 180 ECTS. The course of studies includes organized instruction (mandatory, modular, methodological and elective subjects) and active scientific research work. Postgraduate specialist studies are one-year study courses leading to the academic title University Master (Univ. Mag.) in the chosen field of studies and are a form of continuing education, i.e., lifelong learning. Postgraduate specialist studies in medical biochemistry and laboratory medicine are a part of four-year specialist training of masters of medical biochemistry and lead to the title Specialist of Medical Biochemistry and Laboratory Medicine.

In Belgium, post graduate formation in clinical chemistry follows the Latin model of “clinical biology”, in which training in microbiology, laboratory hematology and clinical chemistry are combined, leading to a professional title of “clinical biologist” which is obtained following a 5-years’ program. The post-graduate study is open to both pharmacists and medical doctors. In the last decade, recruiting candidates with an MD background has become more difficult: the quota for students entering the program imposed by government to fulfill future needs are not reached, which is possibly explained by a diminishing position of basic sciences into the medical curriculum, making the profession less attractive for young doctors. Pharmacists and MD’s get a separate track. Pharmacists get a 2 years’s combined theoretical / practical basic training, followed by a 3 years advanced training, allowing specialisation in 1 or 2 fields of laboratory medicine. Pharmacists get a basic postgraduate diploma after 2 years of study. MDs are evaluated by their university after 2 years (based on a checklist). A basic document describes the various skills (professional, management, communicational, educational skills) to be achieved. Despite the differences between the 2 tracks, there are many similarities. Universities are in charge of the theoretical courses. For both tracks, a master thesis is required. Practical training may occur either in university labs or in recognized teaching laboratories. In view of the changing European postgraduate studies landscape, created by the Bologna declaration, remodelling of the training will become a necessity in the future. The low numbers of trainees per university reduce the yield of the demanding educational workload. This awareness fosters initiatives to introduce new educational tools (e.g. e-learning).
THE EFCC E-LEARNING PROGRAM
Damien Gruson
Cliniques Universitaires Saint Luc, Department of Laboratory Medicine

Since two years, the European Federation of Clinical Chemistry and laboratory medicine (EFCC) has promoted and supported the organization of distance education programs and e-learning courses. E-learning can be defined as all forms of electronically supported learning and teaching. The rapid advancement of computer and information technology in recent years has resulted in the rise of e-learning technologies to enhance and complement traditional teaching and continuing education in many fields, including laboratory medicine. The EFCC initiative has uncovered that e-learning platforms allow to easily create, deliver, track, and manage, in a virtual learning environment, on-demand training content that enables learners and laboratory staff to access training when and where they choose. The recording and publishing of live sessions for on-demand use, complete with quizzes, links, files, and other interactive features are also part of the EFCC initiative. Nevertheless, several challenges are surrounding the release of e-learning solutions. E-learning teams have to understand the educational and training needs, to formulate detailed training strategies but have also to deal with limited personnel, organisational and financial resources. It is also critical for the EFCC to evaluate the information from courses, lectures and documents including electronic learning tools but also to encourage the publication of guidelines for the release of appropriated e-learning solutions for laboratory medicine. However, the two first EFCC e-Seminars have demonstrated that it is feasible to develop and adopt e-learning tools to participate to the training and continuing education of laboratory professionals.

THE EC4 EUROPEAN REGISTER AND THE SYLLABUS FOR SPECIALISTS IN LABORATORY MEDICINE
Rob Jansen
Dutch Foundation for Quality Assessment in Medical Laboratories (SKML)

The EC4 Register of Specialists in Laboratory Medicine was established in 1997. The Register is kept by the Foundation EC4, which knows a General Assembly, a Board and the Registration Commission. The Board is appointed by the General Assembly of National Representative of the National Societies for Clinical Chemistry and Laboratory Medicine of European Union member states. The Guide to the Register (last version 2010) describes the standards required to enter the Register. The EC4RC acknowledges the national registers as they function in the member states provided that they are in accordance with the minimum standards and are based on the curriculum as described in the Syllabus. The EC4 European Syllabus for Post-Graduate Training in Clinical Chemistry and Laboratory Medicine describes the subjects required to maintain a high level of competence needed to safeguard patient safety. Syllabus Version 4 – 2012 is submitted for publication. Applicants to the EC4 Register should both conform to the EC4RC-approved national equivalence of standards for registration and be a member of their national register, where one exists. The EC4RC has developed a Code of Conduct which all applicants to the Register must agree to abide by. The latest version of the European Register of Specialists in Clinical Chemistry and Laboratory Medicine: Code of Conduct was published in 2009. The minimum standard for registration as a European Clinical Chemist is a total of 9 years university and postgraduate study. A minimum of 4 years postgraduate study after gaining a masters university degree must be spent on specialist training in a laboratory in a medical environment, approved and supervised by the national body functioning for that purpose within the health care system of the member state. In a number of countries within the EU there is an increasing trend for Clinical Chemistry to encompass several disciplines. As a result, the professional training can be multidisciplinary (i.e., Clinical Chemistry and for example Haematology, Immunology etc.) Training could be multidisciplinary initially, followed by specialisation, provided the basic training includes clinical chemistry in accordance with the Syllabus. The competences the Specialist in Laboratory Medicine should have are described in the Guide to the Register. A pilot for automatic electronic registration linked to registration in the national register was successfully performed and the system introduced. The Register should be the basis for the Common Training system that probably will be included in the next version of the Directive on Recognition of Professional Qualifications. The Register should serve as the European standard for qualifications of the profession of Specialist in Laboratory Medicine, and could serve as a basis for worldwide harmonisation of such qualification.
LABORATORY MEDICINE PHYSICIAN SPECIALISTS EDUCATION IN EUROPE – DIVERSITY AND HARMONIZATION

Augusto Machado

Botelho Moniz Análises Clinicas SA

Medical and surgical disciplines separated generations ago. Later, each one of them divided into several sub-specialties, selecting for practice a narrower field. The need for a common background has always been considered; that is why all physicians practicing general medicine or any of the specialties have to have a common Medicine basic degree. Laboratory Medicine is practiced in many different ways: from one single multivalent specialty (General Laboratory Medicine) to several independent specialties (monovalent Laboratory Medicine specialties): Hematology and Transfusion Medicine; Clinical Chemistry; Immunology; Medical Microbiology and Laboratory Genetics. Furthermore, from one nation to another monovalent specialties education and practice are not absolutely equal, and some overlaps between them can also be seen. Each European nation can decide about the physician’s specialized education and training. In general, decisions are based on historical, geographical and economic-political background. Until now no common mandatory process has been imposed over all EC countries but the “Doctors Directive” (1975) established for the first time the legal basis and the rules of procedure for mutual recognition of medical diplomas issue in any EU member state and between them. The right for free movement and professional establishment within the entire Europe recognition to medical doctors is a significant political step with major consequences for citizens, professionals, stakeholders and to the authorities. We’ll present the actual European panorama for laboratory medicine physician’s education and practice along EU and EFTA European countries. We also shortly introduce UEMS Laboratory Medicine Specialist Section & Board recommendations and contributions for harmonization of a qualified specialist’s education as well as for the specialty/specialties training centers.

THE HARMONIZATION OF CME CPD IN EUROPE FOR ALL HEALTH CARE PROFESSIONALS

Bernard Maillet

BM Consult

The European Union of Medical Specialists (UEMS) was established in 1958, one year after the signing of the Rome Treaty, and is the representative organisation of the National Associations of Medical Specialists in the European Union, its associated and observer countries and beyond. With a current membership of 35 countries, the UEMS represents an estimated 1.5 million specialist doctors, notably through its 40 Specialist Sections and Boards and 11 Multidisciplinary Joint Committees (MJC's) It has strong links and relations with the European Institutions (Commission and Parliament), the other independent European Medical Organisations (e.g. EJD, UEMO, CPME) and the European Medical / Scientific Societies. In 2000, the UEMS established the extremely important European Accreditation Council for Continuing Medical Education (EACCME®), which facilitates the exchange of CME credits obtained by attending international medical congresses. This recognition is achieved by virtue of common memoranda of agreement on mutual recognition reached between UEMS, the National Accreditation Authorities, the American Medical Association as well as the Royal College of Physicians and Surgeons of Canada. In the fields of continuing medical education (CME) and continuing professional development (CPD), the EACCME ensures access to recognised high quality CME-CPD activities by securing the exchange and recognition of CME credits for medical specialists in Europe through the European CME Credits (ECMEC’s). First the EACCME® took into consideration for the accreditation only live events but obviously e-learning is becoming an important tool for physicians to improve their knowledge, skills and attitudes so it was decided by the UEMS Council to also consider e-learning material for accreditation and this started on April 6th 2009.
THE ROLE OF THE POLYVALENT MEDICAL DOCTOR IN THE LABORATORY
Ludo Marcelis
H.-Hartziekenhuis Roeselare-Menen vzw

During the last 20-30 years medical knowledge vastly expanded, which led to new medical disciplines and sub- or superspecialization. As a consequence, laboratory medicine underwent major changes. The different subdisciplines of laboratory medicine (chemistry, microbiology, haematology, immunology etc.) saw an introduction of new techniques and a big increase in quantity and quality of the available tests, with the biggest change probably in the fields of genetics. A major development in laboratory medicine was also the introduction of management techniques in the medical laboratory and above all the introduction of quality management and accreditation/certification. I will argue that, in this radically changed environment, there is still a need for polyvalent training in laboratory medicine and that there is still a role for the polyvalent medical doctor in the medical laboratory.

LABORATORY MEDICINE AS A PROFESSION AND MEDICAL SCIENCE
Grazyna Odrowąż-Sypniewska
Collegium Medicum Nicolaus Copernicus University

Laboratory medicine is a medical discipline devoted to obtain, explore and employ knowledge on various techniques for the analysis of body fluids and properties of cells and tissues, and interpretation of results in relation to health and disease. Laboratory tests are used in various stages of diagnostic process, being the main source of information on the health status of the patient. Laboratory diagnostics is crucial for the healthcare decision-making process, contributing to improved outcomes and cost savings. Advances in medical sciences and clinical practice cause the continuous increase in demand for laboratory testing. Meeting this demand is possible thanks to methodological and technological progress in laboratory medicine over the past 20 years that has brought measuring various analytes with ultrasensitive methods and testing on cellular and subcellular level. Automation, consolidation and integration of laboratory procedures have completely changed the work in medical laboratories. Laboratory staff must be familiar with complex preanalytical phase, analytical methodology and advanced measurement techniques and equipment, various electronic devices and information systems. This requires continuous updating of knowledge. The contemporary laboratorian should be an expert in the field of advanced measurement techniques and equipment. Required qualifications must include an appropriate body of knowledge of the pathophysiology and diagnostics of diseases, allowing validation of results before reporting and advisory functions offered. Laboratory medicine is also a clinical science integrating basic science, technical performance and clinical context for patient decision making but as the science provides general rules of selection of tests for specific research tasks. Its scientific nature is best reflected in the evidence-based laboratory medicine. All clinical practice guidelines developed for the use of laboratory tests should be based on EBLM rules.
CAN WE HARMONIZE LABORATORY MEDICINE IN EUROPE?

Wytze Oosterhuis
Atrium Medical Center

The EFCC and UEMS Section of Laboratory Medicine/Medical Biopathology in 2009 have decided to join forces on several projects. One is a survey, with the aim to make a clear description of the current state of organizations, practices and responsibilities of laboratory professionals within the European Union. Both the EFCC (EC4 curriculum) and UEMS (“Blue Book”) work at harmonizing the training of professionals with medical or scientific background. This is closely related to the free movement of people, a major goal of European integration. In March 2010 a questionnaire has been sent to representatives of both organisations. Delegates of EU countries were asked to answer questions related to the following subjects: the number of professionals (MD, PhD and other academically trained), content of the laboratory specialty, professional organizations responsible for training, official acknowledgment of training and specialties, length of training, relation of scientific organizations with UEMS and EFCC and accreditation of laboratories. The results will be presented, and show a very diverse situation across Europe in many aspects: the relative number of specialists in Clinical Chemistry, the ratio of specialists with a medical and scientific background, official acknowledgement of the Clinical Chemistry specialties, content of the specialty and responsibilities. In some countries the field of Clinical Chemistry is divided in monospecialties, on other countries there is a broader general or “polyvalent” laboratory specialty. A better understanding of the organization and practice of laboratory medicine will be of help in the harmonization of Clinical Chemistry across Europe.

DILEMMAS IN CPD ACCREDITATION

Lance Sandle
Trafford General Hospital, Department of Chemical Pathology

I will discuss the different types of credit allocation used by the Royal College of Pathologists in the United Kingdom, highlighting differences from other Royal Colleges. I will discuss the difference between prospective and advance accreditation. The use of these approval mechanisms can vary dependent on whether the meeting is local, regional or national. Historically, there has been a time-based approach to recording CPD, with the emphasis on recording attendance, rather than quality of education. For this reason there is a move towards reflective practice. The merits and difficulties of such a development will be presented, together with the common template developed for harmonisation between the Royal Colleges. I will then present criteria to be fulfilled by CPD providers. The European model of accreditation of major providers of events and e-learning will be discussed, together with its advantages and disadvantages, and comparison with North America. The final section of the talk will deal with the likely impact of revalidation on CPD in the UK. One of the drivers of medical revalidation is the public expectation that it will deliver assurance that doctors are up to date. A central component of evidence for revalidation will be participation in annual appraisal including adequate CPD, defined as 250 credits over a five-year cycle. The place of CPD in the context of other revalidation evidence will be presented. In discussion we will focus on the main dilemmas in CPD accreditation: the currency of learning, the responsibility of CPD providers, the reconciliation of commercial incentives with the need for learning, and the interaction of CPD schemes with revalidation.
AN OVERVIEW OF THE CPD CREDIT SYSTEM IN EFCC SOCIETIES

Elizabeta Topic
Croatian Society of Medical Biochemists

Laboratory medicine changes constantly due to new medical information, scientific results and the development of new technology. To keep abreast with all these changes specialists in laboratory medicine follow international movement to incorporate continuing professional development (CPD) as an integral part of the clinical laboratory education continuum, however, this results in many variations across the countries. To record the situation in Europe EFCC created a questionnaire to survey current CPD practice in 38 EFCC National Societies. In it CPD was used as a common term to incorporate continuous medical education (CME) and continuous professional development (CPD). From 38 societies 23 sent their replies. The survey results showed that in 18/23 countries there are CPD programs earning credits and their evaluation is done in 4 by National Societies, in 6 by Professional bodies, in 4 by Government bodies and in 4 by other organisations. Registration or licensing dependant on CPD for laboratory specialists exists in 17 countries and its validity spans from 2 years to a life long period. In 11 countries the re-registration is associated with CPD. Among various CPD events the highest frequency was given for Continuous Education (18/23). Credits to the proposed CPD categories varied according to the Society’s judgement of the importance of the topic area. Although one third of survey participants have not given this judgement the highest credits were granted to the CPD categories related to the active work as presidents or members of NS, EFCC or IFCC and their EBs, Committees, WGs. This study is an initial attempt to document variations related to CPD credit systems in European countries. It will serve for their further investigation and understanding the effectiveness of different systems leading to achievement of European consensus on proposals by EFCC to run its own CPD recognition programs and their evaluation recognized in all EFCC societies.

CLINICAL BIOCHEMISTS: THE UK EXPERIENCE

Patrick Twomey
The Ipswich Hospital, Clinical Biochemistry

Within the UK, the Royal College of Pathologists (the College) was founded in 1962 and is a professional membership organisation concerned with all matters relating to the science and practice of pathology. At the clinical level, the College oversees the examination and assessment processes. There are currently 19 different pathology subspecialties ranging from Autopsy to Virology with no polyvalent option. Since its inception, the Royal College of Pathologists has welcomed non-medically trained scientists as Fellows on a par with their medically trained colleagues – indeed it was the first medical royal college to admit scientists who do not hold a medical degree. The recent decision to admit clinical embryologists on the same basis underlines the value of this policy of keeping the College at the cutting edge of laboratory medicine. Within the 19 different subspecialties, 4 are open to medical candidates only, 1 to dental surgeons only and 2 to veterinary surgeons only. As for all medical specialisation in the EEA, there is relatively tight regulation concerning the training of medics in pathology irrespective of the size of the specialty. 12 of the subspecialties are open to those with science degrees approved by the Council of the College. The degree of overlap in the assessment and examination process for medical and scientific candidates in these 12 subspecialties varies from subspecialty to subspecialty. Not unexpectedly, the degree of the overlap for education and training also varies depending on the subspecialty. The presentation will explore some of the associated issues that arise as a result of these overlaps with emphasis on Clinical Biochemistry.
CONTENTS AND GOALS OF SPECIALIST EDUCATION FOR MD AND SCIENTISTS SPECIALISING IN LABORATORY MEDICINE

Pirkko Vihko

Institute of Clinical Medicine, Department of Clinical Chemistry

Existing development in clinical laboratories in Finland includes: combining of organizations, centralization, automation, streamlining processes and expanding the use of Point-of Care Testing. This is increasing need for internet education, direct consulting and laboratory services for private customers. Challenges are offered by recent developments in biomedicine, molecular biology, new technologies e.g. massspectrometry, chip- and nanotechnologies and sequencing of human genome, which are coming to clinical practise. One has also to manage the new information about proteomics, genomics, metabolomics and new technologies. New knowledge broadens the possibility to use laboratory diagnostics to estimate disease risk, to prevent illnesses and to optimize the care. Personalized medicine (molecular medicine), which means the right care to the right patient at the right time, is coming. All this means that clinical laboratory work is becoming more challenging. It will be used for the choice of treatment, to follow-up and laboratory medicine will become treatment oriented, e.g. treatments with manipulated cells. Expertise will be required in many fields: technic analytical, clinical analytical, laboratory medicine, consulting to clinicians and patients and evidence that is based on basic research and its applications, is needed. The goal of training of hospital chemists (scientists) is to become an expert in: technical operations of the laboratory, following the standards required by analytics, quality systems. The goal of training of specialist (MD) in clinical chemistry/laboratory medicine is to become an expert in laboratory medicine in multidisciplinary treatment community, to perform laboratory diagnostics, to manage the knowledge and competence in biomedicine and molecular biology and to have the ability to acquire and develop new laboratory diagnostics. Both training programmes take five years.
THE EUROPEAN DIRECTIVE ON PROFESSIONAL QUALIFICATIONS; COMMON-PLATFORMS AND THE PROPOSITIONS OF “SPECIALISTS IN LABORATORY MEDICINE”

Simone Zerah
Laboratoire Zerah/Taarl/Pfeffer

2002/2012: we will give a quick overview of the history to enable understanding of where we are now, after active participation in the numerous meetings and questionnaires, and stress the importance for the future of our profession. We are officially recognized by the European Commission as representing the profession. The first Directive of the European Parliament and the Council (2005/36/EC) on Recognition of Professional Qualifications had to be transposed by all Member States by 2007. The primary objective was to simplify the legislative framework by consolidating the many separate directives adopted since 1960. The new proposals focus on bringing the Directive into the twenty-first century and “adapting it to an evolving labour market”. We will present the 2 of the 3 methods for recognising qualifications, the automatic system for 7 “sectoral professions” and the “general system”. We will report the propositions of the "green paper"* and the subsequent draft of the revised directive. The draft of the revised directive was published in December 2011 and has been proposed to the European Parliament by the European Commission. It is currently under discussion. We will explain our strong involvement and position on the main points:
– Professional cards
– “Common training principles” replacing the common-platforms, back to harmonization instead of identifying differences for compensation measures. Only 9 Members States regulating the profession will be needed to make proposals on Common Training Principles
– Better access to information and access to e-government services. Coordinators and contact points. The European Commission wishes better and more active cooperation between the Member States
– CPD
– Partial access
– Rules on language skills
The European professional associations should be well placed to take the lead in devising harmonisation frameworks: our aim is the excellence of our profession in Europe. The new Directive is due to be published by the end of 2012. The European Parliament has officially made it a priority. The Member of the Parliament in charge is Bernadette Vergniaud whom we have met. Meanwhile, we continue to work on the improvement of the draft proposition through the next steps ahead of the adoption of the new Directive.

*Green Paper: published before a draft Directive. Only what is in the Green Paper can be in the Directive
Pregraduate education in clinical chemistry and laboratory medicine is organised on different types of schools. The content of studies at medical schools is, and must be, similar. According to the EU regulations (5500 hrs or 6 years). Nevertheless, the organization of study differs in the individual countries, and sometimes there are even significant differences between schools in the same country. Medical education based on modules is becoming more popular than individual subjects of study. The basic subjects of laboratory medicine are chemistry or biochemistry, immunology, physiology, and internal medicine. The essential objective of the clinical (bio)chemistry is the appropriate request of laboratory tests and their interpretation. Clinical chemistry/laboratory medicine education are also on other schools as pharmaceutical schools, schools of science, or biotechnological schools. The majority of postgraduate students in clinical biochemistry are not graduates of medical schools. PhD students are mostly graduates of scientific, pharmaceutical, and biotechnological schools. This type of studies prepares expert for research and also for routine labs. The main important task is high comparative quality of these programme in Europe based on standards e.g. prepared by ORPHEUS – Organisation for PhD Education in Biomedicine and Health Sciences in the European System. Education provided by individual EU medical or other schools is not properly harmonized. Schools are independent institutions that are extremely proud of their past and traditions; consequently, cooperation in the innovation of study programmes of the individual schools is not often sought after or achieved. The whole harmonization process could be accelerated through more intensive exchanges of teachers and students. We should prepare basic and consensus document with key topics of basic knowledge for implementation to the curricula for education of future experts in laboratory medicine.
EDUCATION ON IMUNOANALYSIS IN BIOMEDICAL RESEARCH

Marie Karlíková, Ondřej Topolčan
Charles University, Faculty of Medicine in Pilsen

Imunoanalytic methods are an important tool for biomarker measurement and therefore for basic and clinical research in medicine. Considering the fast growing knowledge about biomarkers and their function and even faster development of analytical techniques, continuous education of specialists involved in biomedical research is needed. Since 2009, Laboratory for imunoanalysis by Medical Faculty in Pilsen and University Hospital in Pilsen organises educational courses focused on biomarkers, their analytical determination and the application in different areas and concepts of medicine. The aim is to educate people with broad overview and eligible to join or even organise multidisciplinary cooperation and projects. The main characteristics of courses are:

– Multidisciplinarity – different specialists lead participants through clinical, preanalytical, analytical, statistical and other related issues
– Interactivity – participants are motivated to round-table discussions among them and with lecturers
– Focus on practice – demonstration of different laboratory methods (isotope, non isotope, multiplex).

The current portfolio of courses is as follows:

– Methodology of imunoanalytical techniques and overview of their application
– Application of imunoanalysis in oncology
– Application of imunoanalysis in gynecology and reproductive endocrinology
– Biomarkers and personalised medicine
– Monothematic workshops focused on new biomarkers or new applications

Since the courses have been highly appreciated by participants, in the future we intend to add new up-to-date topics and to include the courses to the certified system of further education.

EXPERIENCES WITH E-LEARNING AND DISTANT EDUCATION OF CLINICAL CHEMISTRY AT 1ST MEDICAL FACULTY OF CHARLES UNIVERSITY

P. Kocna (1), I. Šebesta (1), M. Vejražka (1), Č. Štuka (2), T. Zima (1)

Institute of Medical Biochemistry and Laboratory Diagnostics, 1st Faculty of Medicine, Charles University in Prague and General University Hospital in Prague (1), Computer Technology Centre of 1st Faculty of Medicine, Charles University (2)

Multimedia and computer based education started at the 1st Medical Faculty many years ago, and web-based education and eLearning have been developed since 2000. The educative web portal of our faculty (ISSN 1803-6619) running since 2005 was the first step. This website (http://portal.lf1.cuni.cz/index-en.php) was intended to provide information about all types of electronic teaching materials produced by the faculty and there are now nearly 500 educational documents. The unique, international project – MEFANET (Medical Faculties NETwork, http://portal.mefanet.cz/index-en.php) was developed to strengthen the cooperation among Czech and Slovak medical faculties using modern ICT. The primary objective of the MEFANET was to facilitate cooperation among teams from different faculties, and to ensure a horizontal accessibility of electronic teaching tools for both teachers and students. WikiLectures (ISSN 1804-9885 – http://www.wikilectures.eu; Czech version ISSN 1804-6517 – http://www.wikiskripta.eu) has been developed as another tool since 2007 and provide space for a cooperative production and storage of medical teaching materials, which have been created by both teachers and students. An editorial team has been designed to provide support for authors and control quality and rules. Besides the two existing tools for publication and sharing electronic educational materials within the MEFANET network (e-publishing system and WikiLectures), there is another tool available now: space for production and operation of e-learning courses Moodle-MEFANET (https://moodle.mefanet.cz) providing service for e-learning courses within the frame of Mefanet. Educational activities developed in our faculty fully correspond with IFCC recommendations, as our team is involved in many IFCC committees and working groups – Working Group on Distance Education, Committee on Education and Curriculum Development, Working Group on Internet & Distance Learning and Committee on Internet and eLearning.
E-LEARNING IN LABORATORY MEDICINE – PRESENTATION OF 3 PROJECTS FROM CZECH REPUBLIC


Institute of Clinical Biochemistry and Hematology, Charles University in Prague, Medical Faculty and University Hospital in Pilsen (1), Dean’s Office, Medical Faculty in Pilsen (2), Department of Clinical Laboratories, Hospital in Klatovy, a.s. (3), Department of Clinical Biochemistry and Hematology, Masaryk University in Brno and University Hospital in Brno (4), Institute of biomedical departments, Medical Faculty in Ostrava (5), Institute of Clinical Biochemistry and Pathobioc hemistry, Charles University in Prague – 2nd Medical Faculty in Prague and University Hospital in Motol (6), Institute of Medical Biochemistry and Laboratory Diagnostics, Charles University in Prague – 1st Medical Faculty in Prague and General University Hospital in Prague (7)

The aim of this presentation is to summarize the content and significance of three relatively large co-operative e-learning projects that authors actually develop in Czech Republic. These projects are (chronologically according to a date of foundation): CEVA (Centre of Education and Research Abbott, since 2008) – http://www.ceva-edu.cz, E-Clinical Biochemistry (project No.: CZ.1.07/2.2.00/15.0048, since 2011) – http://ebio.biochemik.org and BioHema (project No.: CZ.1.07/2.2.02/02.0003, since 2011) – http://www.biohema.cz. CEVA is devoted to postgraduate education in laboratory medicine and the main activities of this portal are: one new article weekly, courses with credits for continuing education and videoconferences. E-Clinical Biochemistry focuses on pregradual education of medical students in Clinical Biochemistry and the principal products of this project will be electronic textbook and interactive e-learning course. BioHema is dedicated to postgraduate education of nurses and medical laboratory technicians and will offer interactive courses with credits for continuing education. The common denominator of all projects is that they focus thematically on laboratory medicine, are based on cooperation of authors and use Learning Management System MOODLE. The only project that will be available in English too is E-Clinical Biochemistry. The presentation is designed for those interested in cooperative creation of modern study materials for pre- and postgraduate education in medical disciplines (general medicine, medical laboratory technician ...) and for inspiration by technical and management solutions used in projects.

POSTGRADUATED EDUCATION ON CYTOPATHOLOGY AS A SUBSPECIALITY OF LABORATORY MEDICINE IN RUSSIA

I. P. Shabalova, V. V. Menshikov, V. V. Dolgov

Russian Medical Academy of Postgraduated Education

The main goal of our work is to facilitate the education, training and practical experience for cytopathologists, especially for those who live in the remote regions. Clinical Cytology is officially the part (subspeciality) of Laboratory Medicine in Russia. In our country each year more than 48.5 millions cytological analyses are performed in 2830 of 7007 clinical diagnostic laboratories and in 242 specialized cytological laboratories from 51 regions. Doctors of Clinical Laboratory Diagnostic (after the high medical education and oneyear of internship or two years of ordinatura specialization) and biologists (after high biological education and 500 hours of specialization) are certified to work in laboratory medicine in Russia. The professional continuing education is obligatory in our country: every 5 years each of professionals has to join the course of at least 144 hours in postgraduated education departments, organized in every administrative region of the country. Cytologists can work in centralized cytological laboratories, cytological laboratories of cancer research and other centers, oncological dispensaries, clinico-diagnostic laboratories or anatomopathological departments. The Department of Clinical Laboratory diagnostics of the Russian Medical Academy of Postgraduated Education has more than 80 years of experience of teaching in laboratory medicine, as well as in cytopathology. The main innovations in this routine work nowadays are the information technologies, molecular biology and cytogenetics. The usage of information technologies can optimize the cytological diagnostics and thus to improve the health care. We have the experience of computerization in teaching and learning of postgraduates, the interactive systems for learning, diagnostic decision and consultative work were elaborated (expert systems, computerized (standardized) cytological diagnosis, etc). The advantages and challenges of postgraduate education in Russia will be discussed.
CONTINUOUS EDUCATION IN LABORATORY MEDICINE – FROM MEDICAL Student TO LABORATORY DOCTOR

T. Vavilova, L. Gaykovaya, V. Zimina, A. Koslov
North-West Mechnikov State Medical University

Clinical chemistry and laboratory medicine as interdisciplinary profession has been developed during the past 50 years, but its role became more important in modern health care as a consequence of new developments in understanding basic principles of diseases by molecular biochemistry, genomics and proteomics. The broad spectrum of laboratory investigations make consultancy of medical laboratory specialists even more important, as well as the quality of both professionals and laboratories. In order to achieve these goals in the new North-West Mechnikov State Medical University in Saint-Petersburg (on the base of Postgraduate Medical Academy and Mechnikov State Medical Academy) it has become necessary to build up and organize the Laboratory education department for continuous education and training in clinical chemistry and laboratory medicine – both undergraduate and postgraduate courses. The new curriculum for clinical chemistry and laboratory medicine includes the newest scientific approaches, evidence-based medicine principles, the newest IT and technological developments, accreditation and quality system, management and leadership improvement. It consists of 2 courses on undergraduate level – for 4 and 6 year students, made up at 72 hours in auditorium and 36 hours – independently. A few modules of called–for laboratory testing – preanalytical rules, emergency laboratory medicine, clinical assessment of organ function using integrated laboratory data, laboratory immunodiagnostics, laboratory approach to diagnosis of anaemias, laboratory testing in hemostatic disorders etc. – are included. The goal of undergraduate course is to structure the basic and specific knowledge in laboratory medicine among those students, who will work as clinicians. Undergraduate course includes preparing of specialist for laboratory work (1 or 2 years education) and also some short courses in general laboratory or narrow areas of laboratory medicine.

EXPERIENCE OF EDUCATION COURSE: COAGULATION DISORDERS IN CLINICAL AND LABORATORY ASPECTS

T. Vavilova, O. Sirotkina
North-West Mechnikov State Medical University

The postgraduate curricula are designed to provide refresher training for laboratory professionals and clinicians (surgeons, gynecologists, internists, clinical pharmacologist) on a regular basis. The better experience is to educate both – laboratory staff and clinician from the same medical center in the same time. Total course is lasting 72 h (Lectures – 26 h; Seminars + exam – 24 h; Practical exercises in laboratory and clinical departments – 22 h). After finishing this course, participants will improve basic knowledge of the mechanism of coagulation and fibrinolysis, acquire new information on structure, biology and genetics of coagulation factors and genetics of thrombophilia, improve basic knowledge on laboratory testing in diagnosis of aquired and inherited bleeding and thrombotic disorders (risk factors, reasons, predisposition), DIC. They will acquire new knowledge on coagulation disorders treatment and be able to apply and interpret new tests for diagnosis and follow-up of treatment. The main topics are: 1. Mechanism of coagulation and fibrinolysis 2. Disorders of hestostasis and thrombosis: classification and clinical features 3. Structure, biology and genetics of factor VIII and factor IX. Other clotting factor deficiencies 4. Structure, biology and genetics of von Willebrand factor 5. Therapy for von Willebrand disease 6. Laboratory evaluation of bleeding disorders 7. Antiphospholipid syndrome: diagnostic aspects of lupus anticoagulants 8. Genetic approach to thrombophilia 9. Risk factors in venous thromboembolism 10. Thrombophilia, thrombosis and pregnancy, oral contraceptives, hormone replacement therapy 11. Oral anticoagulant therapy, heparin, thrombolytic therapy 12. Laboratory control of antithrombotic and antiplatelet therapy 13. Discussing around the clinical cases, patient’s examination Working with web-resources is included.
PREGRADUATE STUDY IN LABORATORY MEDICINE AS AN IMPORTANT PART OF EDUCATION IN HIGH MEDICAL SCHOOL

Lina A. Khorovskaya, Vladimir L. Emanuel, Mikhail I. Zarayskiy, Irina V. Birulya

Pavlov State Medical University

Modern diagnostic process in Medicine in 70 % is based on data of laboratory investigations and knowledge in Laboratory Medicine are obligatory for all physicians graduated in High Medical School. Education of Laboratory Medicine for medical students in pregraduate level became an actual question for basic education in Medical High Schools. The education program for pregraduate medical students of 6 year study was created in Department of Clinical Laboratory Diagnostics in Pavlov State Medical University in 1990-s. Education program consists of 36 teaching hours and directed to one of the main principle in Laboratory Medicine "to prescribe the right test to the right patient in right time". Students have possibility to study preanalytical and postanalytical phases of laboratory process and some aspects of analytical phase that are necessary to know for sample collection, diagnostic algorithms and test interpretation. In frame of this course students have workshop on using POCT devises with practical exercises in sample collection points in Primary Health Care units. Additionally students have possibility to visit voluntary elective courses in specific area of Laboratory Medicine. Pavlov State Medical University participates in international collaboration with AACC and Journal “Clinical Chemistry” in education sphere. AACC speakers are participating in lecturing program for medical students on most actual questions of Laboratory Medicine that are important for clinicians. Students use “Case Studies” from Clinical Chemistry Journal in their education process. We include “Internet minutes” to our program to make familiar our student with National and International Internet addresses on laboratory Medicine including “Lab Tests Online”. We hope collaboration with EU will help us to develop pregraduate education in Laboratory Medicine for medical students and to harmonize it with National programs.

RAPID DIAGNOSTIC OF CARDIAC TROPONIN I USING BIONEXIA® TROPONIN I

H. Briand, F. Heskia, O. Breton-Laval, L. Bridon, A. Sanjuan

BioMerieux

Background & Aim – Early detection of myocardial infarction(MI)is essential. Cardiac Troponin I (cTnI) is preferred biomarker for detection of cardiac injury in diagnosis of MI. Due to high positive predictive value of TnI for MI, positive result can contribute to early triage of at-risk patients. The objective of this study is to evaluate the sensitivity & specificity performances of the qualitative bioNexia® Troponin I (bioMerieux SA).

Methods – bioNexia® Troponin I test is a qualitative lateral flow immunoassay for the detection of cTnI in whole blood, serum or plasma. The analytical sensitivity was determined using both International standards: Troponin Complex 8T62 (Hytest) & Troponin Complex SRM 2921 (National Institute of Standards & Technology). The relative sensitivity & specificity of the bioNexia® Troponin I test has been established in comparison to a commercially rapid immunochromatographic test. A total of 308 fresh samples from subjects submitted for a TnI test were included in this study. The impact of potentially interfering substances in the assay, i.e. HAMA (Human Anti-Mouse Antibodies) & RF (Rheumatoid Factor) was verified using samples negative or positive for cTnI & containing high titers of HAMA or RF. Cross reactivity was challenged using high levels of skeletal Troponin I, skeletal Troponin T, cardiac Troponin C & cardiac Troponin T.

Results – The results demonstrated an analytical sensitivity < 1ng/mL for both standards. Relative sensitivity was observed at 96.27% [91.51-98.78] CI95% & relative specificity at 99.43% [96.84-99.99] CI95%. No interferences were observed with HAMA &RF. No cross-reactivity was observed with samples containing skeletal Troponin I, skeletal Troponin T, cardiac Troponin C & cardiac Troponin T.

Conclusion – bioNexia® TnI assay results, obtained in 10 min, show state-of-the art performances for qualitative rapid test immunoassay detection of cardiac Troponin I in whole blood, serum or plasma & allow a first-step aid of MI.
COMPARISON OF THE RESULTS OF HPLC METHODS FOR DETERMINATION OF METHANEPHRINE AND NORMETHANEPhRINE FROM URINE AND BLOOD PLASMA CONSIDERING THE DIAGNOSIS OF TUMOR PHEOCHROMOCYTOMA

Alice Vránková (1), Jiří Widimský Jr. (1), Tomáš Zelinka (1), Jan Škrha (1), Eliška Vránková (2)

Internal Department, First Faculty of Medicine and General Teaching Hospital, Charles University in Prague, Czech Republic (1), Centre of Oncology Prevention s.r.o., Laboratory of Cytology, Prague, Czech Republic (2)

Normetanephrine (NMN) and metanephrine (MN), in biological fluids plays an important role in the diagnosis of pheochromocytoma (PHEO) – chromaffin cells tumor. The aim of the study was to compare a HPLC with electrochemical detection method (HPLC-ED) for the determination of metha-nephrine and normethanephrine in blood plasma and a HPLC with fluorescence detection method (HPLC-FLD) for the determination of the same analytes in conjugated form from urine. Both methods interpret the results in relation to the presence of PHEO. The ability of methods to distinguish the patients with and without PHEO has been proved.

THE TEACHING OF LABORATORY MEDICINE AT THE MEDICAL UNIVERSITY AS A BASIS FOR EFFECTIVE DIALOGUE BETWEEN PHYSICIAN AND PATHOLOGIST

V. L. Emanuel, L. A. Khorovskaya, M. I. Zaraysky, I. V. Birulya, Yu. V. Emanuel

Saint-Petersburg State Pavlov Medical University

The quality of medical care may not be higher quality education. Clinical chemistry, as a distinct discipline emerged in the 20th century. The rapid development of technologies for cellular and molecular level formed a laboratory medicine as part of medical science. So medicine is the science of art elected gifted. No major medical or scientific work is not without in vitro studies. They cover the full range of clinical issues: diagnosis, differential diagnosis, monitoring and evaluation of their personality. The modern laboratory diagnosis includes a wide range of expensive tests. Solution to the problem of building sustainable skills adequate application of laboratory diagnosis in the education of the physician within 6 years of education in Medical University for the first time in Russia was invited to SPb State Pavlov Medical University in 1991 year. Experience teaching programs adopted as an advisable for medical universities of Russia in 2002 year. Currently, an innovation for medical schools in Russia is the introduction of the principles of ISO 9001 – 2008 “Quality management systems”. In addition, the Clinical Laboratory Department actively distributed at medical universities in the country the principles of the ISO 15189 – 2009 in the medical laboratories. This universal standard very correctly defines the interaction specialist laboratories and physicians. To this aim, our colleagues carry out continuous postgraduate training of laboratories staff. Feature of teaching programs is the harmonious development of new laboratory technologists and clinical orientation laboratory physician. We are also publishing a peer-reviewed journal “Clinical Laboratory Consilium” for scientists and physicians. The magazine publishes materials and digests “Clinical Chemistry” and other foreign journals. Members of the Editorial Board of the journal are reputable Russian specialists and representatives of the IFCC.
## TIMETABLE

### Saturday, March 17, 2012

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