

## 2.22 E-learning experiences of national societies of clinical chemistry and laboratory medicine

*Petr Kocna*

### Summary

E-learning and distance education opportunities in clinical chemistry were reviewed in 2005 by the International Federation of Clinical Chemistry (IFCC) Working Group on Distance Education chaired by D. Juretic, under the auspices of the Committee on Education and Curriculum Development chaired by L.C. Allen. A second survey of national societies was carried out in 2010 by the Committee on Education and Curriculum Development chaired by P. Kocna and the Working Group on Internet-Distance Learning chaired by V.T. Thanh. The aim of this study was to summarize changes and trends in the use of e-learning and distance education by member societies of the IFCC over a 5-year period. Surveys of national societies were performed using printed questionnaires in 2005 and by on-line questionnaire forms in 2010. The response rate from member-societies was ~50% (34 in 2005 and 42 in 2010). National society websites increased from 70.6% in 2005 to 90.5% in 2010. National society websites with educational sections increased from 41.2% in 2005 to 57.1% in 2010. Lectures and presentations published on websites are still the most widely used form of educational resource (79.2% in 2010 and 71.4% in 2005). In 2008 the IFCC Committee on Education and Curriculum Development published an on-line Educational Resource Database recommending 254 resources for education in clinical chemistry and was visited more than 1790 times by visitors from 86 countries. This database is regularly used by 12 national societies and 40% of societies recommended distance education on their websites. The internet educational resource most often recommended by national society websites was the NLM PubMed database (mean mark 2.3) followed by Google (mean mark 2.38). A majority of national societies (76.2%) preferred a unified IFCC educational strategy and many responses promoted the concept of IFCC education credits (59.5% of responding national societies).

### The use of e-learning education in clinical chemistry

The International Federation of Clinical Chemistry (IFCC) Committee on Education and Curriculum Development (CECD) and Working Group on Distance Education (WGDE) jointly drafted the first IFCC survey on website education, e-learning and distance education in May 2004 while at a meeting in Sousse, Tunisia. This first survey was conducted with printed questionnaires circulated to national societies who were members by mail and was analyzed in January 2005 (by D. Juretic, chair of WGDE and L.C. Allen chair CECD). A second survey of national societies was carried out in 2010 via an on-line internet questionnaire (produced by P. Kocna, chair of the CECD and V.T. Thanh, chair of the Working Group on Internet-Distance Learning).

This study summarizes changes and trends in the use of e-learning and distance education in clinical chemistry over the 5-year period between 2005 and 2010. Responses were received from approximately 50% of member societies for the two surveys (34 in 2005 and 42 in 2010). National society websites increased from 70.6% (24 of 34) in 2005 to 90.5% (38 of 42) in 2010, and the educational sections of websites increased from 41.2% (14 of 34) in 2005 to 57.1% (24 of 42) in 2010. The most important changes were 5-fold increases in undergraduate study programs, e-mail teaching communications and the use of electronic books (►Tab. 2.22.1).

The responses from 2005 to 2010 listed in ►Tab. 2.22.1 show a dramatic increase in e-learning activities in clinical chemistry. This trend affected most medical disciplines and was not unique to clinical chemistry. This trend was fostered in Europe and the Czech Republic in particular in 2006 when the network of medical faculties MEFANET (MEDical FACulties NETwork [1]) was created. The MEFANET aimed to efficiently share medical teaching materials. It achieved its goals using web portals that were accessible to all member faculties using a common internet gateway. Medical teaching materials were shared among 10 faculties of the Czech and Slovak Republics. This unique collaborative environment allowed educational resources to be easily shared and in turn this led to the rapid adoption and growth of the network.

In 2008 the IFCC CECD published an on-line Educational Resource Database recommending 254 resources for education in clinical chemistry (<http://eduweb.virt.cz>). The database has been visited thousands of times by visitors from 86 countries. The database was developed on Common Gateway Interface (CGI) scripts – EZDB.CGI programmed in Perl by S. Barde, running on the 1st Medical Faculty of Charles University web-server. The database environment has been used in the past for other educational resources, electronic journals and medical images [2]. The database attempts to cover all main clinical chemistry topics [3,4], as published in *Selected Modern Curricula and Training Program Requirements for Training in Clinical Chemistry and Clinical Laboratory Medicine*, where web-based educational resources are available [<http://www1.lf1.cuni.cz/~kocna/edu/>].

The second survey of national societies determined the preferences for internet-based educational resources used in different countries. The internet educational resource

**Tab. 2.22.1:** Percentage of national society websites with specific educational materials based on survey responses in 2005 and 2010.

Web-based education activity	2005	2010
Undergraduate study program in CBLM	2.9%	11.9%
Postgraduate study program in CBLM	20.5%	38.1%
Program of specialization in CBLM	14.7%	28.5%
Clinical cases	5.8%	11.9%
Multiple choice questions	2.9%	7.1%
E-mail teaching communication	2.9%	16.7%
Electronic books	2.9%	16.7%
Educational use of EQA national programs	17.6%	9.5%
Lectures of congresses or courses	29.4%	45.2%

CBLM, Clinical Biochemistry and Laboratory Medicine; EQA, external quality assessment.

most often recommended by national societies was the NLM PubMed database (mean mark 2.3) followed by the Google search engine (mean mark 2.38). Most national societies (76.2% – 32 out of 42) preferred a unified IFCC educational strategy promoted by the concept of IFCC educational credits (59.5% – 15 out of 42 societies).

## References

- [1] Stipek S, Dusek L, Schwarz D, Stuka C, Vejrazka M, Nikl T. MEFANET – a new kind of network for electronic support of medical and health care education. In: Siemens G, Fulford C., eds. Proceedings of the world conference on educational multimedia, hypermedia and telecommunications. Chesapeake, VA: AACE; 2009, pp. 1323–5.
- [2] Dohnal L, Kocna P. Electronic Journal – clin biochem on the web using a database CGI script. Clin Chem Lab Med 2001;39:S285.
- [3] Allen LC. Clinical case material for teaching clinical chemistry and laboratory medicine. Clin Chem Lab Med 2001;39:875–89.
- [4] Fink NE, Allen LC. Handbook on master program in clinical laboratory sciences. Clin Chem Lab Med 2003;41:1379–86.