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A Master Class for European Hematology

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Background

As already highlighted in previous articles,[1-3] successive European Commission educational grant support has created and consolidated a platform for harmonizing training and increasing the level of competence among young hematologists across Europe. This direction of travel began in 2002 with the European Council for Accreditation in Hematology (ECAH) project. Challenged by results then of significant heterogeneity in specialty training offered to future hematologists across Europe, one of the deliverables was the establishment of a pan-European network of champions in the individual national societies of hematology to provide grassroots support and act as linkers in standardizing training. Another key deliverable was the establishment of a European Curriculum Passport (CVP) to promote mobility. Utilized as the basis for the EU-supported grant in 2008-2011 entitled European Network for Harmonization of Training in Hematology (H-Net), the CVP underpinned the proposal to implement strategies of the Life-long Learning Programme. This will further progress towards improved, harmonized hematologic training to raise standards of patient care and public health. H-Net also focused on identifying and mapping educational needs at an individual, nation state and European level. The roadmap would then enable development of a comprehensive and contemporary suite of educational tools to address educational needs.

In addition to existing tools within the EHA educational portfolio, e.g. tutorials, pod and webcasts, a missing element was a more personalized educational approach that could be tailored but yet converge knowledge and enhance professionalism. Development of a European Master Class in Hematology (EHA Master Class) appeared as the most relevant tool in leveling up competency and enhancing safety for the patient with hematologic disorders.

Conventional master classes

There are many reported formats and styles of master classes. These can range from textbooks coupled to online slide shows to face-to-face courses with experts presenting specific topics and taking place in one location. There are pros and cons of different formats but location-specific events would require considerable investment in transport-related costs and are unlikely to provide cost-effectiveness if frequent and regular events are necessary across Europe. There again, there are formats for different purposes, e.g. for short-term targets of passing examinations, or those that are more centered on life-long professional development. In general, master classes offer an opportunity to learn, in particular from a master but also in the presence of peers.[4] As such, the student or trainee is likely to feel under some pressure to make a favorable impression and the impact of the setting can present fresh perspectives that could accelerate the learning process. In non-medical settings, students' perceptions of master classes are generally positive with over 80% agreeing that these form an important part of the curriculum.[5]

The pilot EHA Master Class

The pilot Master Class was developed as part of the H-Net project on the principles of providing both cost-effective and sustainable solutions to personalized training for each trainee in any broad area in hematology that was identified as a gap or weakness in the Harmonized European Hematology CVP. It was planned with expert educational input as an on-line group learning experience with building of professional and social networks to share knowledge and experience on complicated real-life clinical scenarios devel-

Table 1. Key themes of the EHA Master Class.

• Online peer-group supported learning
• Emphasis on knowledge refinement and professionalism
• Social networking format
• Mentoring from a distance
• Transferable value

Table 2. Future EHA Master Class developments.

• Topic specific or bite-sized Master Classes
• Increasing multi-disciplinary application
• Patient enrichment of educational materials
• Research skills Master Class
• Continued professional development opportunities

oped by case authors with expertise in the field and facilitated by mentors who were themselves fully-qualified hematologists. As such, this Master Class represented a multidisciplinary effort in its broadest sense.

A pilot EHA Master Class was launched in 2010. Twenty-five young hematologists nearing the last 18 months of their training were recruited. The objective of the Master Class was to refine clinical judgement and calibrate decision-making over sharpening diagnostic acumen (Table 1). The trainees, who represented 15 countries, were nominated by their national societies through an established network of linkers with EHA. They were divided into five groups of mixed nationalities and each group was mentored by an experienced hematologist. All participants had the opportunity to have an initial face-to-face meeting with each other and their mentor at the EHA Congress in Barcelona in June 2010.

The pilot Master Class started at the beginning of September 2010 and continued through to mid-March 2011 with only short breaks between study periods. Six cases were studied in five study blocks. The cases, based on real patients, were deliberately chosen by lead specialists to be complex and challenging. They ranged right across the areas of the CVP; i.e. Clinical Hematology (benign and malignant), Thrombosis and Haemostasis, Transfusion Medicine and Diagnostics. Typically a case lasted four weeks, with new material posted each week following the progress of the patient, results of tests and the development, followed by outcome of management strategies. Each week, the study material (presented as PowerPoint slides) ended with a set of questions to help focus each group's discussion. Every fortnight, each group prepared a report on their deliberations that were structured by the questions and posted onto an online repository that was accessible by the case authors. After the study period, an online feedback session was timetabled with the case author commenting on the groups' reports and responding to any questions. Three tools were used in an integrated way: a social networking site (NING) for the main learning and asynchronous discussions within the groups; a conferencing tool (Blackboard Collaborate) for a synchronous feedback session on the trainees' reports and question-and-answer from the case authors; and a repository/content management tool (Confolio) to store study materials, background literature and group reports.

The pilot EHA Master Class was carefully evaluated based on data gathered around three key aspects: the quality of learning, the experience of the learners, and the cost of supporting the Master Class in terms of time spent by case authors and mentors. Early indications suggested that this was a sustainable model for high-quality training that had been much appreciated by the trainees. Three years after completion of the pilot, the legacy has included evidence of professional mobility/relocation, continued social/professional networking within groups, and an engagement to the continued activities of the EHA.

Next steps: a suite of EHA Master Classes

Building on its focus on education-by-evidence, the EHA has continued the model piloted in H-Net, with yearly Master Classes since 2012. As this is a considerable shift from traditional training and education formats, careful evaluation has continued and the response continues to be highly positive. Competition to join the Master Class is growing with its reputation spreading by word of mouth. Via the linkers and the national societies, there is also steady interest from potential mentors and case authors to allow pooling of resources and facilitators to grow in pace with demand.

In terms of the quality of learning, the current focus for the 'standard' Master Class is to enrich the case materials with digital resources that would emphasize the patient's perspective and highlight other aspects of Section 8 of the CVP, which addresses general and professional skills. Thus, a first step is to provide videos of patients discussing their experience of their illnesses. There are opportunities here for fruitful collaborations with a range of patients' organizations (Table 2). A second initiative is to take the model of online collaborative learning and use it in a different context; the 'bite-size' Master Class (BsMC). These are envisaged as short study blocks focused more precisely on specific conditions or topics. Again, each study block will be built around real cases but 2 or more cases may be combined to ensure coverage of the major issues associated with the condition. The study emphasis will be less on diagnosis and more on management and treatment, since those choosing to participate in a particular BsMC will select it because they wish to fill a gap or refresh their knowledge in a specific area. This model may well have appeal beyond the original target audience of trainees nearing the end of their specialization and could attract experienced hematologists wishing to up-date or refresh their knowledge in specified areas, especially as revalidation is an increasingly important issue in some countries.

Summary

The EHA Master Class format is an innovation in peer-group supported learning from a distance. A collaborative, trainee-centered approach can promote motivation at a social level that enhances a sense of professional competence. It is seen as a 'green' model and allows the EHA to continue offering the Master Class with no dependence on external sponsorship. There are also opportunities to strengthen partnerships with other professional groups and with patient advocacy groups in improving the quality of hematologic education. With its different formats tailored to different needs, this contemporary Master Class format is adaptable, sustainable and transferable beyond the hematology specialty and the geographical or political boundaries of Europe.

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Morphology and immunophenotyping issues in the integrated diagnosis of hematologic disorders of elderly patients

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In the middle of the 19th century, when Bennett and Virchow were trying to decide whether "leucocythemia" or "leukemia" would be the proper word to describe the recently discovered chronic myelogenous leukemia (CML), life expectancy was steadily rising from around 40 years of age in the previous century, to finally reach 50 years in 1900. This is to say that many hematologic disorders were extremely rare at that time. Nowadays, a newborn baby may expect to live up to 100 years old.[1] Among the myriad of challenges this perspective raises, that of an increase in chronic hematologic disorders is to be foreseen and in fact can already be perceived. Four major evolutions can be highlighted which will require the skill of trained morphologists and adapted flow cytometry studies, for integrated diagnoses and follow up, where cytogenetics has already an important place and where that of molecular and next generation sequencing (NGS) techniques will certainly find theirs. They are namely: i) nutritional deficiency-related and autoimmune disorders, mostly anemia;[2] ii) chronic myeloproliferative/myelodysplastic or lymphoid neoplasms; iii) therapy-related secondary leukemia/lymphomas; and iv) follow up of long-term survivors.

Nutrition is complicated for elderly people and related problems are often underestimated. Even when they are institutionalized in facilities where dietary concerns are taken care of, food intake is not necessarily well controlled in pre-senile or senile individuals. The issue is obviously even worse for people living on their own who sometimes have a low income or who fail to feed themselves properly. For Biermer disease or hemolytic anemia, the picture is made more complex by the increase in autoimmune diseases resulting from an aging immune system. As age and other diseases possibly find an equilibrium, several other conditions (renal failure, cardiovascular diseases) may lead to a decrease in hemoglobin levels associated with a variety of morphological anomalies of the erythroid lineage which have to be recognized.

Chronic proliferative diseases of the myeloid and lymphoid lineage will also likely be diagnosed with increased frequency in an aging population. Myeloproliferative neoplasms (MPN) are mostly diagnosed on the basis of increased blood counts in one or several lineages. Morphological examination of blood or bone marrow smears, together with cytogenetics findings, usually confirms the suspected diagnosis. Nowadays, molecular identification of *BCR-ABL* gene fusion, *Jak2* or calreticulin mutations can provide both the basis for the initiation of targeted therapy[3] and a means to follow minimal residual disease after allogeneic stem cell transplantation (alloSCT), now considered for fit patients who had previously been considered "old" only on the basis of their age.[4] Although immunophenotypic anomalies have been reported in these diseases, they are of little interest in the current management of such patients. Myelodysplastic syndromes (MDS), which are usually diagnosed by the discovery of one or several cytopenias around the age of 70 years, have long received only supportive care. The development of new drugs, likely to decrease transfusion dependency and its complications is changing this picture. Proper diagnosis and application of the International Prognostic Scoring System (IPSS) or the International Prognostic Scoring System Revised (IPSSR)[5] prognosis criteria require a combination of morphology and cytogenetics. In the past few years, the positive input of specific immunophenotypic exploration has been stressed by collaborative groups[6] and is now recommended in the most recent guidelines.[7] Therapeutic management of these diseases in elderly patients, however, raises a number of practical and organizational issues, not to mention the influence of comorbidities and an aged hematopoietic system possibly less and less responsive to stimulation.[8]

Chronic proliferations of the lymphoid lineage are also likely to cause greater concern. There remains uncertainty as to how to manage monoclonal B-cell lymphocytosis, diagnosed by cell count and immunophenotyping,[9] or low-grade chronic B-cell disorders such as marginal zone lymphoma[10] or hairy cell leukemia, even if the recent discovery of *BRAF* mutations targetable by vemurafemib provides a new opportunity for refractory patients, who are likely to be older.[11] Conversely, large trials and efficient therapeutic