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Introduction: Progress towards meeting the challenges in clinical microbiology and infectious diseases

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With their elusive epidemiology, infectious diseases present new threats and increasingly complex challenges for healthcare systems. Ecological changes, global warming and the massive increases in movements of people and foodstuffs around the globe facilitate the dispersion of microbial pathogens. Emerging infections as well as increasing antimicrobial resistance in community- and hospital-acquired infections demand close monitoring and continuous revision of diagnosis, management and control strategies. The threat of deliberate release of biological agents was made clear by the anthrax attacks using the US mail system a few years ago. The rapid dissemination of a new disease, the severe acute respiratory syndrome, has highlighted the vulnerability of our global society to unforeseen epidemics. Its control demonstrated the importance of 'on-line' communication and coordination of expertise from the bedside to the laboratory and public health agencies to cope effectively with such threats.

Nosocomial infections, which affect patients admitted to both acute-care facilities and long-term and home-care facilities, carry a tremendous burden of morbidity as well as healthcare and disability costs. Effective therapies for some of these infections are disappearing, due to the increasing prevalence of strains with multiple antibiotic resistance in healthcare settings and the emergence in the general population of a reservoir of human carriers of resistant bacteria, such as methicillin-resistant *Staphylococcus aureus* and extended-spectrum β-lactamase-producing Gram-negative bacilli. It is no wonder, therefore, that stepping up the prevention and control of infection is higher than ever on the political agenda, as illustrated by the launching of the European Centre for Disease Prevention and Control in Stockholm this year.

Faced with these rapidly evolving challenges, public health and patient care delivery systems must adapt in a flexible and pro-active manner. Progress depends on dialogue and cooperation between health sciences and medical practice, between healthcare professionals managing infection, and between countries facing these challenges, taking into consideration their diverse historical backgrounds, local priorities and assets.

While these epidemiological trends create new challenges, astounding advances in molecular biology, laboratory instrument and information technology provide new tools of great potential to improve the impact of clinical microbiology on infection diagnosis, control and therapy. On the other hand, constraints on health-related expenditure are prompting initiatives to review current laboratory organisation and practice with a view to improving cost-effectiveness. Concentration of technical resources in core laboratories and geographical centralisation of testing facilities are some of the new organisation models. These changes generate concern about the potential loss of expertise and quality of diagnostic service, but also spur the debate on the role of qualified medical microbiologists in the management of laboratory services and expert contribution to patient care programmes. Clinical infectious diseases services, likewise, are faced with rapidly expanding needs and are experimenting with novel delivery models. The need for clinical expertise covers a broad range of nosocomial and opportunistic infections, HIV/AIDS, tropical diseases, hepatitis, tuberculosis and paediatric infections. These infectious diseases can be managed under the direct care of infection specialists or in collaboration with the clinical staff of medical, surgical and intensive care departments.

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In tertiary care centres, particularly those with a teaching role, there has been a successful concentration of multidisciplinary expertise in 'infectious disease centres' bringing together clinical specialists, medical microbiologists and infection control specialists. This close collaborative arrangement appears valuable for optimal service delivery and also provides an essential resource for medical education, postgraduate training and integrative research. As a key component of quality of care, an infection prevention programme should be developed for all healthcare institutions by physicians trained in healthcare epidemiology and implemented with the support of dedicated infection control practitioners. It is a matter for concern that there is no certified medical specialty training in infection control in most European countries and that many hospitals lack such specialists.

Progress is being made across Europe to strengthen the quality of specialty training and continuing education in the infection disciplines. The European Society of Clinical Microbiology and Infectious Diseases (ESCMID), through its support of the Union of European Medical Specialties (UEMS), has assisted the Sections relevant to infectious disease and medical microbiology in harmonising the training curricula by agreeing on their core content and defining the competence requirements for these specialists. The ESCMID also supports continuing education, an activity that is essential for maintaining the proficiency and sharing the expertise among health professionals, through its annual congress, postgraduate courses, workshops, summer school and administration of European Continuing Medical Education (CME) credit certification of educational events.

Five years after the first ESCMID Workshop on the Challenges in Clinical Microbiology and Infectious Diseases was held in Birmingham [1], a second international workshop was organised by the ESCMID in March 2004 in Leuven, Belgium, with the support of the Belgian Society of Infectiology and Clinical Microbiology. The objectives of this Workshop were to review progress and share experience in the organisation of infection diagnosis, treatment and prevention services in European countries, and to formulate recommendations concerning specialty training requirements, continuing professional development and options for the optimal delivery of healthcare and protection against infection.

The Workshop was attended by 70 delegates representing 28 countries, including participants and contributors from the World Health Organization (WHO) the European Commission and the UEMS. Keynote lectures and position papers were presented and were then discussed in three Working groups, each of which focused on one of the following topics:

- public health challenges for infectious disease surveillance, alert and response systems;
- professional needs and models for healthcare services (microbiology, infectious disease, infection control);
- specialist training and continuing medical education in the infection disciplines.

The articles presented in this conference report summarise the current challenges and appraise the major areas of progress achieved in these areas in Europe, as well as formulating the conclusions reached by the Working Groups. It is hoped that these recommendations will stimulate further debate at national and international levels and form the backbone of a strategy by which professionals in the infection disciplines can pursue excellence in their mission of controlling infectious disease and protecting the health and wellbeing of citizens.

REFERENCE

1. Finch R, Beeching N, Phillips I, eds. Workshop: Meeting the challenges in clinical microbiology and infectious diseases. *Clin Microbiol Infect* 2000; **6:** 401–52.