



Features

New strains, tougher gains

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The current era of globalisation, which sees an increasing flow of information, goods, capital and people across political and geographic boundaries, continues to expose Europe to infectious diseases, recently illustrated by the new influenza A H1N1 epidemics. Europe is not immune to the growing global threat that can be posed by an isolated outbreak of an infectious disease in a seemingly remote part of the world, and therefore needs to be prepared to prevent, control and treat emerging, and re-emerging, infectious diseases.

The outbreak of influenza A H1N1 is possibly the most important event of the past 40 years in human influenza. And it has highlighted how important it is to improve our influenza vaccine production systems and capacity, regardless of whether an A H1N1 vaccine is developed. Currently we have capacity to produce doses that could protect in the event of a pandemic of an estimated one billion people – yet with a global population of some 6.7 billion, clearly there is not enough for all. And it is worth remembering that influenza A H1N1 belongs to zoonotic infections – defined as those transmissible directly or indirectly between vertebrate animals and humans. Zoonoses account for many of the recently emerging infectious diseases with high potential for public health and socio-economic impact – for example, the severe acute respiratory syndrome (SARS) and Asian influenza epidemics – and for the continuing, major burden associated with food-borne infection.

Other areas of increasing European public health concern in infectious disease include nosocomial infections, multidrug resistance and HIV infection, as well as food-, water- and air-borne infections. All these challenges have recently attracted growing attention and combating cross-border threats from communicable diseases is a key issue for Europe today.

Infection control still holds top priority for the European medical community, and global efforts to reduce the spread of hospital-acquired infections require relentless vigilance. Findings released at the 2009 European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) in Helsinki in May show how with concerted efforts (including alcohol hand rubs, medicated soap, effective information resources and patient empowerment materials), hospital acquired infections, such as those caused by MRSA (Methicillin-resistant *S.aureus*), can be reduced by half. Screening all hospital admissions is also shown to reduce levels of MRSA by as much as 70%. Such initiatives clearly demonstrate that the spread of disease can be effectively contained and lives saved.

Other trends reported by the scientific community at the recent ECCMID include the ever-growing prevalence of infection caused by bacteria producing ESBLs (Extended-Spectrum Beta-Lactamases), which are resistant to the most common antibiotics (such as penicillins and cephalosporins) and were previously only being seen in high-risk settings such as intensive care units. Now, an increasing body of evidence shows that these bugs are progressively spreading to all other hospital wards as well as to outpatients, thus making treatment of infections increasingly difficult even within the community.

More worrisome in a future perspective seems to be the increasing appearance of bacteria producing MBLs (Metallo-Beta-Lactamases), resistant to an even wider range of antibiotics and often causing serious infection – such as sepsis and hospital-acquired pneumonia – virtually untreatable with currently available drugs. Data shows that these bugs are progressively spreading across Europe, with the highest prevalence being reported from the Mediterranean area (Greece, Israel and Italy).

In the near future, physicians may face the spectre of treating serious infections without effective antimicrobials. Some infectious diseases could become almost untreatable as a consequence of

increasing multi-drug resistance and the very limited availability of new antibiotics, as is already occurring with the new extremely drug-resistant (XDR) forms of tuberculosis. Indeed, very few antimicrobial agents have been developed during the last decades, while antibiotic resistance has increased dramatically. All the new molecules recently developed by the pharmaceutical industry lack the wide range of antibacterial action that characterised many traditional antibiotics, therefore restricting their use only to specific infections and prompting the physicians' need for more accurate diagnosis and broader knowledge in this field. Some 25% of people with gram-negative septicaemia currently die; despite this, the development of new antimicrobials is woefully inadequate and – vice versa – one has to witness the declining interest of pharmaceutical industries in research and development in this field.

The strong institutional pressure for limiting the number of antibiotic prescriptions sometimes leads many patients and physicians to consider these drugs as something to avoid: this is not correct and might even be harmful. Antimicrobial drugs must be regarded as an essential tool in daily medical practice and their crisis is seriously undermining the effective treatment of many infections, even of life-threatening ones. The issue is that antibiotics are frequently misused and abused, but their restriction does not solve the whole problem. In order to contain antimicrobial resistance, proper antibiotic therapies should be tailored to individual patients and patients must co-operate with their physicians, following carefully their instructions, especially in relation to the compliance with the prescribed antibiotic treatment. Unjustified prescriptions (when no use of antibiotics is indicated), inappropriate prescriptions (errors in the choice of antibiotic or in the duration of the treatment), and self-medication should be combated; the concerted actions of medical microbiologists and specialists in infectious diseases, as well as patient-oriented educational programmes, may lead to a significant reduction of misuse and abuse, thus decreasing the risk of generating potentially untreatable diseases.

The European Society of Clinical Microbiology and Infectious Diseases (ESCMID), affiliating more than 33,000 clinical microbiologists and infectious diseases specialists, has an important role in tackling the challenges we face today in emerging infectious diseases. The society promotes and supports basic and applied research, as well as education and training, across the disciplines of clinical microbiology and infectious diseases. To facilitate the access to recent scientific developments, ESCMID organises topic-focused conferences, postgraduate courses, workshops and summer schools. To improve exchange of expert opinions and to facilitate scientific advances, ESCMID has created different study groups in a number of specific areas of interest.

ESCMID also organises Europe's largest conference in this field, with more than 8,000 experts sharing latest knowledge and practice to improve the fight against infectious diseases in our continent and around the world. The European Congress of Clinical Microbiology and Infectious Disease takes place annually in the spring, being conducted next year in Vienna, Austria (20th ECCMID, 10-13th April 2010).

Two new initiatives have been launched recently to foster trans-European co-operation and professional and academic exchange. The ESCMID Collaborative Centres are clinical microbiology and/or infectious disease centres of excellence in Europe and beyond. They attract and welcome ESCMID members from abroad to learn about diagnostic and therapeutic procedures, organising services, and to establish new contacts and foster international exchange. The ESCMID Observerships are funded opportunities for any ESCMID member to visit an ESCMID Collaborative Centre for a period of up to one month.