SOCIETY
European Council 2007, Minutes

PROFESSIONAL AFFAIRS
Progress toward the Creation of an Independent UEMS Section of Clinical Microbiology

SCIENCE AND EDUCATION
The Year in Microbiology and Infectious Diseases
Table of Contents

In this issue

Society
3 Editorial
4 European Council 2007 – Minutes
6 ESCMID Scholarships 2007
8 FEMS/ESCMID Research Fellowship 2007
9 Upgrade of the CMI Manuscript Central

Professional Affairs
10 Progress toward the Creation of an Independent UEMS Section of Clinical Microbiology
13 Scientific Travelogue in the Caucasus
14 New Era in the Field of Recognition of Professional Qualifications
16 What Can the EIT Do for You?

Science and Education
17 The Year in Microbiology and Infectious Diseases
26 Review of the 6th ESCMID Summer School 2007 in Suceava, Romania

Course Reports:
28 – A Modern Approach to the Management of Sexually Transmitted Diseases
30 – ESCMID Postgraduate Course on Anaerobic Infections
32 – Bacterial Molecular Typing – A Practical and Theoretical Course
33 Europe-China Anti-infection Forum: Second ESCMID Visit to China
34 Focus on Lower Respiratory Tract Infections: 1st and 2nd GRACE Workshop
38 Foreign Laboratory Grant Report: Molecular Aspects of the Host-Pathogen Interaction during Bacterial Infection
39 Conference Report: 7th Annual Meeting of the Italian Society of Virology

Book reviews:
41 – Exposure: A Guide to Sources of Infection
42 – Physician’s Guide to Arthropods of Medical Importance, 5th Edition

Calendar
43 Forthcoming Events

Imprint

ESCMID News
Newsletter of the European Society of Clinical Microbiology and Infectious Diseases

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Haemorrhagic Viral Infections in Europe: An Emerging Threat

Murat Akova, ESCMID Education Officer, makova@hacettepe.edu.tr

Viral haemorrhagic fever syndrome can result from a diverse group of viral infections including filoviruses, arenaviruses, bunyaviruses, and flaviviruses. Owing to the tragic consequences that may occur with some of these viral infections, both the medical community and the lay public have been highly interested in these infections. Misinformation sometimes provided by the media and the film industry has augmented the fear in the public mind and has led to a higher-profile disease awareness. An example is the suspense film, Outbreak, starring Dustin Hoffman, which was released shortly after a major outbreak of Ebola in Kikwit, Zaire in 1994. The film was about an outbreak of a fictional and extremely highly contagious Ebola-like virus called Motaba (1). Although the film was not a huge box-office success, it was highly successful in alarming the public, leading a media-frenzy and raising a series of ‘what-if’ questions (e.g. whether the CDC was ready to face a similar epidemic).

The possibility of using these viruses as agents for bioterrorism has also been featured prominently in the media and in medical literature. However, the real-life facts are somewhat different than those presented on the screen and in the press: the two filoviral infections (i.e. Ebola and Marburg) are usually endemic in Africa and major epidemics were seen in rural areas of Uganda, Gabon and Zaire where sanitary conditions and medical facilities are very poor. Spread almost always occurred through intimate contact with patients, usually with their bodily secretions. Similarly, while Lassa fever caused by an arenavirus is a significant threat for Western African countries, it is not for Europe (2).

In theory, the ease of global travel may allow these infections to occur anywhere in the world; however, the potential for epidemic spread is low. From a European perspective, some of these infections are more important than others. For example, in a recently published report by the European Network on Surveillance of Imported Infectious Diseases (TropNetEurop; available at: www.tropnet.net), severe dengue haemorrhagic fever was reported in 23 (11%) of 219 cases with dengue virus infections imported to Europe from various endemic regions (3).

Nevertheless, not all haemorrhagic fevers in Europe are travel-related and imported from endemic regions. Hantaviruses infect wild rodents and virus-contaminated rodent urine is the main vehicle for aerosol transmission. In Europe, four hantaviruses, Hantaan, Puumula, Dobrava, and Saaremaaa, have been reported to cause haemorrhagic fever with renal syndrome (HFRS), characterized by fever, thrombocytopenia and acute renal failure (4). Puumala causes the generally mild disease, nephropathia epidemica, whereas Dobrava infections often also have haemorrhagic complications. Saaremaa virus infections are similar to those caused by Puumula. Small rodents called Clethrionomys glareolus (bank voles) are reservoirs for Puumula virus which causes infection throughout Europe except in the Mediterranean region. Dobrava and Saaremaa carried by different type of rodents are reported mainly in eastern and central Europe.

Crimean–Congo haemorrhagic fever (CCHF) is caused by CCHF virus belonging to the family Bunyaviridae, genus Nairovirus. The virus is transmitted to humans through infected ticks or through direct contact with the viraemic animals or humans. Among various ticks responsible for transmission, Hyalomma spp. are the most important vector for the virus. Outbreaks of CCHF have been documented in Africa, the Middle East and Eastern Europe including Greece, Bulgaria and Turkey. In Turkey where the disease is endemic in central and eastern Anatolia, more than 500 cases have been reported since 2002. Clinical features of CCHF are characterized by a sudden onset of fever, severe myalgia, headache and in severe cases, haemorrhagic manifestations. The reported rate of mortality ranges between 3 and 30% (5).

Our Society is highly concerned with these emerging viral infections. That was the rationale for choosing viral haemorrhagic fevers as the subject for an ESCMID Conference which will be held in Istanbul, Turkey on 27 - 28 June 2008 (details available at www.escmid.org/conferences). This will be jointly organized by the Turkish Society for Clinical Microbiology and Infectious Diseases (KLIMIK) and the Italian Society for Virology. While the audience will be able to hear from world-known experts on the stage, a walking and sailing tour into the medical history of Istanbul will also be offered to the participants. I strongly urge you to take advantage of this opportunity and be with us next June in Istanbul!

References
Minutes

Meeting during the 17th ECCMID, Munich, on 1 April 2007 at 12:15 h

Ragnar Norrby, ESCMID President, welcomed the 67 participants to the second meeting of the European Council in its new composition and especially greeted Bernard Maillet, UEMS Secretary General, and John Degener, Chair of the UEMS Microbiology Commission, as special guests.

1 Approval of the Minutes of the European Council Meeting 2006
The minutes from the European Council meeting 2006 as included with the Agenda were approved without comments.

2 ESCMID Progress Report 2006
Ragnar Norrby gave a brief assessment of the current status of ESCMID:
– During the past years the Society has consolidated its activity profile in the field of education and research and established its recognition as a leading society in the field of clinical microbiology and infectious diseases.
– The financial situation of ESCMID has stabilized. With current funds the Society would now be able continue its usual activities for at least two years with only the income from membership fees. This fortunate situation allows the Executive Committee to increase spending in 2007 for activities from which the membership will directly benefit.
– In 2006 the EU activities further increased. ESCMID actively participates in EU projects, e.g. GRACE and EUCAST, and the ESCMID Study Groups, e.g. ESGCD, have been noted by ECDC as source of expertise.

The term of the current CMI Editor-in-Chief, Kevin Towner, will expire at the end of 2008. In view of the long transition period, the Publications Committee already started to look for a successor in early 2007. Ragnar Norrby was pleased to announce that the Executive could commit a very prominent ESCMID member, Professor Didier Raoult from Marseille, to become the 4th Editor-in-Chief of our journal.

3 Update on the Affiliation Process
Since Patrick Francioli, Secretary General, could not attend the Council meeting, the report on affiliation was given by Giuseppe Cornaglia, President-elect. The current European Council meeting is the second in its new format if the meeting during the transition period in 2005 is not counted. A total of 48 societies, most national societies across Europe in the field of clinical microbiology and infectious diseases, have by now joined ESCMID as affiliated societies. One of their main benefits is the receipt of information through ESCMID Online News and the cooperation on educational and scientific activities. Furthermore, ESCMID is planning a European Workshop on Professional Affairs in the autumn of 2008 in Rome, in which the European Council members will play an important role. For details see item 8 below.

4 ESCMID Online Training and Career Centre
Robert Read, Professional Affairs Officer for Infectious Diseases, presented the new ESCMID webpage for advertising open positions and posting individual profiles of those seeking a job in clinical laboratories, research facilities and hospital wards in the infection field. An emphasis of this new service is the promotion of professional opportunities for trainees which includes the possibility to search for exchange visits. The online forms also address language skills as they are important, especially if patient contacts are involved. Robert Read expressed his wish that the platform is extensively used and especially called on the institutions to list their openings on the ESCMID website in order to make it a success.

5 Development of European Medical Practice Guidelines
The objective of this initiative, presented by Robert Read and Hélène Aubry-Damon, Professional Affairs Officers for Infectious Diseases and Clinical Microbiology, respectively, is the development of evidence-based ESCMID guidelines in the field of infectious diseases and laboratory diagnostics to promote Good Medical Practice across Europe. They must obviously be relevant for all European countries by providing different options for varying premises in different parts of Europe. Topics include: Management of adult lower respiratory tract infections (with ERS, ongoing), Management of tuberculosis (with ERS), and Management of catheter-related urinary tract infections (with IDSA). The European Council will play an important role in guiding the Society to select further topics and to provide national guidelines as a starting basis.

6 Pending Proposal for an Independent UEMS Section of Clinical Microbiology
Elisabeth Nagy as former Professional Affairs Officer for Clinical Microbiology informed the Council about the recent formal submission by various countries to the UEMS Council for the establishment of an independent Section of Clinical Microbiology. Surveys conducted by ESCMID indicated that 20 out of 27 member countries of UEMS recognize Clinical Microbiology as a specialty. But at the level of UEMS the specialty of Clinical Microbiology is still represented only by a Commission of Microbiology as part of the UEMS Section of Medical Biopathology. Most national societies for Clinical Microbiology as well as ESCMID members consider this inappropriate and requested that ESCMID deals with this issue. ESCMID, however, is not in the position to file a request for a new Section but it supported and coordinated the formal submissions by various national medical associations to this end.

Comments from the floor:
John Degener, Chair of the Microbiology Commission, confirmed that the specialty of Clinical Microbiology is not adequately represented by the current bodies. When UEMS was founded in 1958, only a minority of the founding members recognized Clinical Microbiology as a medical specialty. By now,
this situation has drastically changed, rendering the formation of an independent Section of Clinical Microbiology a necessity. Only through this separation from the UEMS Section of Medical Biopathology can the inter-mingling of professional affairs issues related to different medical laboratory specialists, polyclinical specialists, and clinical microbiologists be resolved.

Bernard Maillet, UEMS Secretary General, pointed out that two-thirds of the UEMS member countries must take a specialty in their home territories to warrant the formation of a new UEMS Section. This condition is fulfilled by Clinical Microbiology. In addition, the specialty in question must be listed by the EU, which is also the case for Clinical Microbiology. The third requirement for the formation of a new Section is the approval by the UEMS Council. The existing Sections have the formal right to be heard before a decision is made. In the case of Clinical Microbiology not all Sections’ opinions have been received. If the schedule continues as planned the issue might be decided at the Council meeting in October in Bratislava.

Roger Finch, Nottingham, supported the formation of a new Section of Clinical Microbiology. This specialty exists in simply too many countries to not be represented by an independent Section. Not only training and education but also issues of professional migration require a separate Section devoted to this specialty.

Guijs Ruijs from Zwolle and Giorgio Palù from Padua, pointed out that the process of forming a new Section takes too long. UEMS should realize that essentially all clinical microbiologists in Europe support the formation of a separate Section. Bernard Maillet responded that all interested are free to lobby the national associations to vote ‘yes’ on this issue at the upcoming Council meeting.

John Degener repeated that the issue must be resolved quickly. The Microbiology Commission rests until a decision is made. The current situation cannot persist much longer.

7 ESCMID and GRACE

Roger Finch, former ESCMID President and Co-leader of the GRACE Curriculum and Education Committee (Workpackage 12), gave a brief overview of the ESCMID activities within the GRACE project. GRACE is a Network of Excellence, funded by the EU and running from 1 Mar 2006 to 28 Feb 2011. It is devoted to research and dissemination of knowledge in the field of lower respiratory tract infections with the goal of reducing antibiotic resistance. The specific goal of Workpackage 12 is the translation of research into clinical practice. To this end a curriculum of basic knowledge for researchers, clinical microbiologists and clinical practitioners has been developed. It has a modular format covering: host-pathogen interactions and the lung; the bacteriology of RTI; viruses and the respiratory tract; basic and applied aspects of antimicrobial chemotherapy; molecular and genetic tools for research; LRTI – epidemiology, economic and social impact; community LRTI syndromes; definition of the high risk patient; current approaches to investigations and severity assessment; antibiotic resistance impact on management and outcomes; and LRTI policies and guidelines. In this context several postgraduate courses and educational workshops are organized by ESCMID and ERS during the 5-year period of the project. In addition, an e-learning portal is established to further help disseminate the knowledge. Roger Finch called on the represented societies to promote ESCMID’s educational activities among their membership, including those running under the GRACE umbrella.

8 Plans for a Professional Affairs Conference in 2008

The development of the Professional Affairs portfolio will be a major objective for Giuseppe Cornaglia during his forthcoming presidency. He announced that to this end a Professional Affairs Workshop will be organized in fall 2008 in Rome. The purpose will be to review the status of our professions across Europe and discuss initiatives to improve the organizational basis for medical practice in our disciplines. In preparing the workshop an extraordinary meeting of the European Council will take place in early December. The members of the ESCMID European Council will receive personal invitations for the meeting. The affiliated societies will play an important role in this undertaking.

9 European CME Accreditation

The European system for CME accreditation has many flaws as pointed out by Peter Schoch, ESCMID Managing Director. EACCME, the European Accreditation Council for CME, is operated by UEMS. It acts as a clearing house in which European accreditation is based on the accreditation by the national accreditation boards of the host country and the accreditation by the respective UEMS Section. This need for dual accreditation renders accreditation cumbersome. Worse, however, is the fact that the accreditation criteria applied by the many national accreditation authorities and the European specialty accreditation boards of the UEMS Sections are not harmonized. The number of CME credits awarded for the same conference or workshop can therefore differ depending on the country where the event is held. This situation is not convenient for a European CME provider such as ESCMID. Peter Schoch thus called on UEMS to establish a simpler system in which Europe-wide events are accredited by a European body applying the same quality criteria irrespective of where an educational event takes place.

Bernard Maillet, UEMS Secretary General, agreed in principle. At the same time he referred to the difficulty of depriving the national accreditation boards of their competence. In his view any European accreditation system must therefore, at least in the near future, include the national accreditation authorities of the host country.

10 Issues Raised by the European Council Members

No request to speak.

Ragnar Norrby thanked the participants for their participation and adjourned the meeting at 13:25 h.

Basel, 20 November 2007

Ragnar Norrby  Peter Schoch  ESCMID President  Managing Director
The Individuals Listed below Were Awarded an ESCMID Attendance Grant in 2007 for One of the Following Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Attendees</th>
</tr>
</thead>
</table>
| 17th ECCMID / 25th ICC 2007 Munich (travel grants and/or free registration) | Adler, Amos, (Jerusalem, Israel)  
Al-Akeel, Raid Abdulrahman S., (Manchester, UK)  
Albrich, Werner C., (Soweto, South Africa)  
Allice, Tiziano, (Turin, Italy)  
Aunpad, Ratchaneewan, (Pathumthani, Thailand)  
Bakhshi, Bita, (Tehran, Iran)  
Barbosa, Joana, (Porto, Portugal)  
Bellac, Caroline, (Bern, Switzerland)  
Brilliantova, Anna N., (Moscow, Russia)  
Bruns, A. H. W., (Utrecht, the Netherlands)  
Bucur, Marcela, (Bucharest, Romania)  
Carriço, João André, (Lisbon, Portugal)  
Casey, Pat, (Cork, Ireland)  
Cavaco, Lina, (Copenhagen, Denmark)  
Chin, Judy N., (Detroit, USA)  
Chini, Vassiliki, (Rion Patras, Greece)  
Chiu, Chih-Yung, (Taiyuan Hsien, Taiwan)  
Cramer, Jakob P., (Hamburg, Germany)  
Curiao, Tania, (Madrid, Spain)  
Deshpande, Lalitagauri M., (North Liberty, USA)  
Dragomir, Cristina Elena (Bucharest, Romania)  
Edelstein, Mikhail, (Smolensk, Russia)  
Etang, Josiane, (Yaounde, Cameroon)  
Fairest, Jasmeet, (Surbiton, UK)  
Figueiredo, Teresa, (Lisbon, Portugal)  
Friedrichs, Claudia, (Leipzig, Germany)  
Galánis, Eleni, (Vancouver, Canada)  
Garcia Castillo, María del Carmen, (Madrid, Spain)  
Gerber, Joachim, (Göttingen, Germany)  
Gomes Pereira, Sandra Isabel, (Porto, Portugal)  
Grandirard, Denis, (Bern, Switzerland)  
Hammond, Santosh, (Houston, USA)  
Harigaya, Yoriko, (Buffalo, USA)  
Hazran, Rawi, (Tel Aviv, Israel)  
Hernández Tolosa, Johana E., (Bogota, Colombia)  
Hobbs, Joanne, (Leeds, UK)  
Hussein, Khetan, (Haifa, Israel)  
Ikonomidis, Alexandros, (Larissa, Greece)  
Ivanescu, Daniela Lucia, (Bucharest, Romania)  
Jang, Hee Chang, (Seoul, Republic of Korea)  
Jogi, Eerik, (Tartu, Estonia)  
Juda, Marek, (Lublin, Poland)  
Katragkou, Aspasia, (Thessaloniki, Greece)  
Khryanin, Aleksey, (Novosibirsk, Russia)  
Kim, Dong-Min, (Gwangju, Korea)  
Kiwunuka, Gertrude N., (Mbarara, Uganda)  
Klimashevskaya, Svetlana V., (Nizhniy Novgorod, Russia)  
Konorev, Marat, (Vitebsk, Belarus)  
Kothari, Atul, (New Delhi, India)  
Lamagni, Theresa, (London, UK)  
Macfarlane-Smith, (Louissa, Bradford, UK)  
Machado, Elisabete, (Porto, Portugal)  
Malhotra-Kumar, (Surbhi, Wilrijk, Belgium)  
Manosuthi, Weerawat, (Monthaburi, Thailand)  
Markovska, Rumyana, (Sofia, Bulgaria)  
Martí Martí, Sara, (Barcelona, Spain)  
Matrat, Stephanie, (Paris, France)  
Mesko Meglic, Karmen, (Ljubljana, Slovenia)  
Novais, Angela, (Madrid, Spain)  
Pamar, Arvindkumar, (Manchester, UK)  
Paul, Mical, (Petchabun, Israel)  
Potz, Nicola, (London, UK)  
Preziuso, Silvia, (Matelica, Italy)  
Putcharoen, Opas, (Bangkok, Thailand)  
Radice, Celina M., (Rosario, Argentina)  
Rajinisz, Aleksandra, (Warsaw, Poland)  
Rato, Alexandra, (Monte de Caparica, Portugal)  
Rauch, Isabella, (Salzburg, Austria)  
Rodriguez-Morales, Alfonso J., (Caracas, Venezuela)  
Rolo, Dora, (Monte de Caparica, Portugal)  
Sanchez Cespedes, Javier, (Barcelona, Spain)  
Schuurman, Tim, (Groningen, the Netherlands)  
Sharma, Sanjib Kumar, (Jhapa, Nepal)  
Sipahi, Ozgur Resat, (Izmir, Turkey)  
Sohail, Muhammad, Al Ain, (United Arab Emirates)  
Stepanyan, Artak, (Yerevan, Armenia)  
Stimac, Danijela, (Zagreb, Croatia)  
Suitoro, Indrek, (Tartu, Estonia)  
Szabo, Dora, (Budapest, Hungary)  
Talebi, Maliheh, (Tehran, Iran)  
Tam, Vincent H., (Houston, USA)  
Tarasaeva, Elena, (St. Petersburg, Russia)  
Topan, Adriana, (Cluj-Napoca, Romania)  
Valverde, Aranzazu, (Madrid, Spain)  
Van Leer-Buter, Coretta, (Nijmegen, Netherlands)  
Vermeeersch, Pieter, (Leuven, Belgium)  
Veziris, Nicolas, (Paris, France)  
Vidal, Liat, (Petchabun, Israel)  
Volokhov, Dmitry, (Rockville, USA)  
Wellinghausen, Nele, (Ulm, Germany) |
Wittwer, Matthias, (Bern, Switzerland)
Yao, Kaihu, (Beijing, China)
Yeniova, Özgur, (Ankara, Turkey)
Yeung, Bonnie, (Montreal, Canada)
Yingsiwaphat, Vorraphun, (Bangkok, Thailand)
Zaloudikova, Barbora, (Brno, Czech Republic)
Zeighami, Habib, (Tehran, Iran)
Zinyowera, Sekesai, (Harare, Zimbabwe)

Postgraduate Education Courses, ESCMID
Summer School and Conferences organized or co-organized by ESCMID

Agdestein, Angelika, (Norway, Alesund)
Alvarez Martinez, Miriam, (Barcelona, Spain)
Ali Thobari, Jarir, (Indonesia)
Atabay, Halil Ibrahim
Ayala, Gerardo, (Madrid, Spain)
Badicut, Ioana, (Bucharest, Romania)
Bean, David Cristian, (London, UK)
Bego, Artan
Berglund, Carolina, (Örebro, Sweden)
Blasco Lluch, Maria Dolores, (Spain)
Bochenek, Magdalena, (Cracow, Poland)
Bootsma, Hester, (Nijmegen, the Netherlands)
Borisova, Aleksandra, (Sofia, Bulgaria)
Bottje, Nazan, (Turkey)
Bragonzi, Alessandra, (Milan, Italy)
Brindusa Copacianu, Stefania, (Iasi, Romania)
Bucur, Marcela, (Bucharest, Romania)
Calbo, Esther, (Barcelona, Spain)
Caliman-Sturza, Olga, (Suceava, Romania)
Candevir, Ashlan, (Adana, Turkey)
Cazin, Irina, (Zagreb, Croatia)
Cheng, Ching-Wai, (Taipei City, Taiwan)
Corcionivoschi, Nicolae, (Dublin, Ireland)
Cotar, An Ioana, (Bucharest, Romania)
Cummins, Joanne, (Cork, Ireland)
Damborg, Peter, (Denmark)
Daprai, Laura, (Milan, Italy)
Datta, Suvarnay
Deveci, Aydin, (Van, Turkey)
Dobay, Orsolya, (Budapest, Hungary)
Dogan, Metin, (Konya, Turkey)
Drulis-Kawa, Zuzanna, (Wrocław, Poland)
Drzewiecki, Artur, (Cracow, Poland)
Enache, Liviu, (Tirgu Mures, Romania)
Fernandez-Olmos, Ana, (Madrid, Spain)
Florea, Dragos, (Iasi, Romania)
Fokin, Alexander, (Smolensk, Russia)
Franzín, Laura, (Torino, Italy)
Frazão, Nelson, (Oeiras, Portugal)
Gabitashvili, Ketevan, (Tbilisi, Georgia)
Garcia Amado, Maria Alexandra, (Maldives)
German, Vasilios, (Voula, Greece)
Godlewksa, Renata, (Poland)
Gomez, Elia, (Madrid, Spain)
Grabowska, Anna Daria, (Poland)
Gupta, Nishith, (Berlin, Germany)
Habib, Ihab, (Mellebeke, Belgium)
Hadzi-Petruseva Melosva, Ivanka, (Skopje, Macedonia)
Harboe, Zitta B., (Copenhagen, Denmark)
Heller, Ingrid, (Innsbruck, Austria)
Hocquet, Didier, (Besançon, France)
Ikonomidis, Alexandros, (Larissa, Greece)
Ilade, Elena, (Iasi, Romania)
Jidovo, Andreea, (Bucharest, Romania)
Juda, Marek, Lublin, (Poland)
Jyrna-Ellam, Marika, (Tallinn, Estonia)
Kaakoush, Nadeem, (Australia)
Kampagianni, Ourania, (Athens, Greece)
Kuo, Ing Tiau, (Taipei, Taiwan)
Kurčič, Biljana, (Skopje, Macedonia)
Kurti, Arsim, (Prishtina, Kosovo)
Lo Cascio, Giuliana, (Verona, Italy)
Löfmark, Sonja, (Stockholm, Sweden)
Luján, Adela, (Cordoba, Argentina)
Machado, Idalina, (Braga, Portugal)
Macia, Maria D., (Palma De Mallorca, Spain)
Macovei, Ioana Sabina, (Bucharest, Romania)
Mainets, Maarit, (Tartu, Estonia)
Mamali, Vasiliki, (Athens, Greece)
Mazzariol, Annarita, (Verona, Italy)
Mdegela, Robinson H.
Milic, Nada, (Belgrade, Serbia)
Miraglia, Maria, (Oeiras, Portugal)
Mitt, Piret, (Tartu, Estonia)
Mizrachi Nebenzahl, Yaffa, (Beer Sheva, Israel)
Montanari, Sara, (Bologna, Italy)
Montesinos Hernández, Isabel, (La Laguna, Spain)
Moyano, Alejandro, (Cordoba, Argentina)
Murajda, Luka, (Martin, Slovakia)
Mullu, Esvet, (Antalya, Turkey)
Nicolau, Juan (Spain)
Nunes, Sonia, (Lisbon, Portugal)
Obasuyi, Osahon, (Benin City, Nigeria)
O’Callaghan, Julie, (Cork, Ireland)
Okoli, Arinze, (Australia)
Fernandez-Olmos, Ana, (Madrid, Spain)
Patrozou, Eleni, (Providence, USA)
Perjesi, Luca, (Budapest, Hungary)
Pierdomenico, Sandro, (Busto Arsizio, Italy)
Pimenta Rodrigues, Marcus, (Sao Paulo, Brazil)
Puchades, Francesc, (Benigamim, Spain)
Raïkai, Cisla, (Szeged, Hungary)
Ren, Ran
Revalthi, Gunturu, (Nairobi, Kenya)
ESCMID and FEMS offer a joint award to foster outstanding research in microbiology by young European scientists. Every year each organization selects one individual among their recipients of research fellowships to receive an additional amount of EUR 1000 from the other organization. We are delighted to announce that the fourth combined FEMS/ESCMID fellow is Isaac Corbacho from Badajoz, Spain.

**Research Interests**

Isaac Corbacho is a PhD student at the above university. His main research interests are the structure, biochemistry and genomics of *Saccharomyces*. His research project granted with the FEMS Research fellowship is *Quantification of glycosylation efficiency in different Saccharomyces cerevisiae alg mutant strains using a MS-based quantification assay*. This project will be conducted at the Institute of Microbiology, Swiss Federal Institute of Technology in Zurich, Switzerland.
Announcement Concerning *CMI*: Manuscript Central Upgrade

*Judith Crane, CMI Managing Editor, judith.crane@escmid.org*

The *CMI* site for submissions and the editorial process (http://cmi.manuscriptcentral.com) will migrate to an upgraded version in mid-January 2008.

- Submitting authors and reviewers will very likely be familiar with the latest version of Manuscript Central which is currently being used by a number of other journals. Those who are not may be assured that the basic features remain the same and the new features should make submission and review easier.
- Apparently, the number of authors seeking support services decreases by 50-75% when journals upgrade systems; however, access to user tutorials will be available on each screen and the usual support services will remain intact.

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Progress toward the Creation of an Independent UEMS Section of Clinical Microbiology

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Background
In a previous article (ESCMID News 2007; issue 2: 14-17) it was explained why Clinical Microbiology had not achieved the status of an independent specialist section within the framework of the UEMS. The history of this situation dates back to the middle of the past century, when only a few European countries decided to establish an economical and political union. During that period the UEMS was founded as a professional lobby of recognized medical specialties. For each recognized specialty a UEMS Section was created and delegates were selected by the specialist national medical associations to convene within each specific monospecialist section. These sections form the backbone of the UEMS. At that time laboratory medicine had not yet reached the degree of (sub)specialization, as it now has. In the past fifty years, however, Microbiology has developed into an influential and respected medical specialty in many countries within and outside of Europe. Partly due to the impressive expansion of the European Union, many Member States now recognize Clinical Microbiology as a full specialty, and the situation has therefore changed drastically.

Presently, Microbiology is represented as an informal subspecialty in the Commission of Microbiology under the umbrella of the UEMS Section of Medical Biopathology. For many years there has been discussion on this positioning. In addition active members of the Commission of Microbiology have made progress in developing a consensus training programme and criteria for a specialist UEMS fellowship. Nevertheless, the wish to become an independent section with its own identity is growing, augmented by pressure exerted by the individual national and international professional and scientific societies.

UEMS Council Meeting on 11-13 October 2007 in Bratislava
The request to become an independent Section of Clinical Microbiology was put on the meeting agenda of the UEMS Council meeting in Bratislava in October 2007 and the Commission of Microbiology was offered the opportunity to express its views.

These views were put forward as follows:
– When UEMS started its work in 1958, there were six member states: Belgium, France, Germany, Italy, Luxembourg and the Netherlands. Five of these states recognized polyvalent laboratory medicine and three considered Microbiology as a distinct specialty. By consensus it was decided to bring these disciplines together into one Section of Laboratory Medicine. This name was later changed to The Section of Medical Biopathology.
– In the last half century, Microbiology has developed significantly as a clinical specialty with a training programme of four to five years in many countries around the world. The majority of the UEMS-affiliated countries, 20 of 27, recognize Microbiology as a full specialty. This is more than the required one-third of full members to petition for an independent specialty, according to UEMS rules. Therefore the Specialty should be recognized at the European level by the UEMS.
– Microbiologists not only from the older Member States, but especially those from the new ones find the present status of the specialty in the UEMS fully unacceptable.
– The title ‘Medical Biopathology’ is ill-fit to the Specialty and continuously gives rise to nonconstructive discussions within the Section of Medical Biopathology.
– Meeting twice a year with delegates from disciplines, with which Clinical Microbiology appears to have little affinity within the framework of the Section of Medical Biopathology, is not considered an effective exercise.
– The creation of a separate section is firmly supported by all members of the Microbiology Commission and by the profession as a whole, which is represented by the European Society of Clinical Microbiology and Infectious Diseases. Therefore an independent Section should be created.

During this meeting of the UEMS Council, Dr. Merten, President of the Section of Medical Biopathology, objected that problems will arise for the Section of Medical Biopathology if the Commission of Microbiology decides to become independent. It may even be followed by the withdrawal of further sections such as: Clinical Chemistry, Immunology, Transfusion, Haematology and Polyvalent Laboratory Medicine. This certainly would weaken the position of Laboratory Medicine. Furthermore, a separation of Microbiology, would be harmful for those who are or have been trained in polyvalent laboratory medicine, are predominantly practicing microbiology and therefore should be considered as microbiologists.

Therefore, if the Council chose to create a new Section of Microbiology, a modus should be found to prevent severe damage to the present Section of
Country delegates during the Board and Section meeting of the UEMS Section of Medical Biopathology in Lisbon 2006

Medical Biopathology and to deal with polyvalently trained specialists.

Delegates in the UEMS Council, in particular the past Council presidents Dr. Twomey (Ireland) and Dr. Halila (Finland) felt that the request of the microbiologists is justified, under the condition that the Secretary General of the UEMS, Dr. Maillet, should, together with the Section of Medical Biopathology, advise on a plan to create a federation of laboratory-based specialties, which include the afore-mentioned disciplines and, possibly, Surgical Pathology.

Following these discussions the present UEMS Chairman, Dr. Fras, asked the Council to postpone the intended voting procedure to recognize a Clinical Microbiology section and proposed a moratorium until the spring Council meeting in Brussels in order to allow time to prepare the federation structure. The proposal was approved with 16 in favour and three against the proposal.

On behalf of the Microbiology Commission it was stated that there should be no misunderstanding that the microbiologists consider an independent section as the only solution. However, the Commission is favourable toward cooperation with other laboratory-based specialties, especially in view of laboratory medicine developments within large scale organizations, now relevant in Europe.

Finally it was decided that Dr. Maillet, Dr. Merten as President of the Section of Medical Biopathology and I as Convener of the Microbiology Commission would come forward with a proposal to the Section of Medical Biopathology at the meeting in October in Linz for cooperation in a federative structure.

Meeting of the Board and Section of the Section of Medical Biopathology and the Commission of Microbiology on 20 October 2007 in Linz

During the autumn meeting of the Section of Medical Biopathology, a separate meeting of the Microbiology Commission took place. Once more it was stated that:

- The polyvalent approach, with a limited training period for a number of specific disciplines, is different from full training in the Clinical Microbiology specialty which consists of a four-to-five year intensive training period.
- The discussion on the justification of recognition has been ongoing for ten years.
- The decision to create a separate Section should be taken as soon as possible so as to free up more of the Commission’s resources for other issues.
- For many years the Commission of Microbiology has requested that the Section of Medical Biopathology rename itself to adequately represent the microbiologists as well.
- The German Society of Microbiology is considering a withdrawal from UEMS as they foresee no immediate resolution of the issues at hand.

These views were summarized during the subsequent plenary meeting of delegates to the Section of Medical Biopathology and made up the introduction to a plea to support the creation of a new Section of Clinical Microbiology.

Future cooperation will be welcomed by the newly created Section of Clinical Microbiology, but this obviously should serve a mutual interest. The problem of qualified microbiologists in countries that do not recognize the monospeciality and thus cannot send delegates according to UEMS rules, cannot be solved at this time, but the new Section is prepared to accept monovalent specialists with a polyvalent background and will pursue a status of equal treatment. It is suggested that the Section of Medical Biopathology also designs a structure in which monospecialists from polyvalent countries can find their place. This is an obvious common goal for both sections, which can only be achieved through cooperation.

The UEMS has offered a possible solution in the form of a federative cooperation. Such a federative structure only provides a discussion platform and is comprised of delegates from one or more sections. Final decisions concerning the functioning of one or more sections can be made by the sections only. This approach and its consequences will need further study.

Statements made by the Section and Board of Medical Biopathology

At the end of the meeting in Linz the Section of Medical Biopathology made the following con-
cluding statements:
- The Section of Medical Biopathology takes into account that its Commission of Microbiology seeks to form a Section of its own.
- Whereas the delegates of the Section believe strongly in the unity of Laboratory Medicine as a whole (i.e. Medical Biopathology, Polyvalent Medical Pathology, Laboratory Medicine, Clinical Haematology and Transfusion Medicine, Clinical Immunology, Clinical Chemistry and Clinical Microbiology), it respects the wish of its Commission of Microbiology.
- The Section believes that cooperation between the two future Sections should be within a federation and requests the UEMS Council to simultaneously create a Section of Clinical Microbiology and a Federation of Laboratory Medicine.

Conclusion
Many members of the Microbiology Commission contacted their respective national delegates from the medical associations to the UEMS Council, in order to provide information about an independent Section of Clinical Microbiology. Many delegates supported this proposal during the UEMS Council meeting in Bratislava. Nevertheless it will be of utmost importance that contacts between members of the Microbiology Commission, their national scientific and professional societies and Council delegates are maintained until this issue is definitively settled during the Council meeting in Brussels in April 2008.

Finally, the Microbiology Commission will convene during ECCMID 2008 in Barcelona following the Council’s decision in April 2008. This meeting should be considered to be a founding meeting for the new Section of Clinical Microbiology.
Settled at the border between West and East in one of the world’s most turbulent areas, almost cast away from the ordinary pathways of scientific communication, the three Caucasian republics have been the recent locations of a workshop and two satellite conferences organized by ESCMID together with that region’s stakeholders and opinion leaders, to better understand their problems and the possibilities for an ESCMID collaboration.

When traveling in the Caucasus, one runs through an interior itinerary and, in the same way as Marco Polo eight centuries before, one discovers the door to the East and the vestiges of the origin of Mediterranean civilization. Moreover, for a physician this is the land of Chiron, the mythical Centaur who was a teacher for Aesculapius, and brought up and operated on Achilles.

In a tepid night, we reached Baku, the capital of Azerbaijan, and immediately understood that we were visiting a country that is undergoing a great renewal made evident through the chaotic traffic, construction at most buildings and squares, and a lively urban atmosphere. Our host, Adalat Abdullayev, head of APUA (Alliance for the Prudent Use of Antibiotics), led us inside a very active hospital, the ‘Central Hospital Oilworker’, a fascinating mixture of top-level technology and buildings under renovation. In a crowded meeting room we met colleagues from all over the three countries that carefully listened to our presentations and openly shared their points of view considering that clinical microbiology and infectious diseases represent a real challenge in a changing medical and surgical environment.

After a short but intense visit to the old Baku, following the steps of the Argonauts we reached Georgia, the mythical Colchis, with its modern capital, Tbilisi. In the Square of Freedom, it was impossible not to think of the tormented history of this country during the last decades, although the familiar symbol represented by the golden statue of Saint George reminded us that this is Europe, although an often neglected and lesser-known part of it.

At Tbilisi, we had the opportunity to meet physicians and scientists from all three neighbouring countries (Azerbaijan, Georgia, and Armenia). Alexander Nanuasvili hosted the event, which provided an intense and lively debate on the common problems that the three Caucasian republics face in this post-Soviet era. Once again, we could witness how advanced technologies and standard international technologies in specific fields - such as HIV - are not matched by an acceptable level of basic clinical microbiology. After a brief visit to an ancient monastery in the oldest capital of Georgia, Mtskheta, we again travelled to another country, Armenia.

After a long and tiresome car trip, including an old-style lengthy procedure at the border, we reached Yerevan, the legendary capital of Armenia, at night. Yerevan is a lively, young, and sprightly city, but with the awareness of a long history. The old monastery that we visited, founded by Gregory ‘the Illuminator’ around 16 centuries ago is not far from Yerevan. The intense and lively meeting with the mostly young Armenian colleagues, coordinated by Narina Sargysant, ‘illuminated’ us on their wish to share information with the ‘Old Europe’ on microbiology and infectious diseases, especially on those infections that are more common in our countries, and on those (malaria, amoebiasis, etc.) that are still common in their region, and probably sometimes forgotten in the ‘Old Europe’. In the background, the old mountain Ararat stood impassive and understanding.
New Era in the Field of Recognition of Professional Qualifications

An Baeyens, Legal Officer, Regulated Professions Unit of DG Internal Market and Services, European Commission

General introduction
Since the seventies, European legislators have built up a legal framework for the recognition of professional qualifications. Initially, separate directives were dedicated to specific sectors (doctors, nurses, midwives, dental practitioners, pharmacists, veterinary surgeons and architects) as they not only introduced a system of recognition, but also harmonized the minimum training requirements. Since this type of legislation always involved a very difficult and lengthy process, and since more than 200 regulated professions existed among the different Member States, a more general approach was put in place, i.e. a general system of ‘non-automatic’ recognition, where harmonization of the minimum training requirements was no longer the aim. Later, the recognition of various professional qualifications became possible without harmonizing the minimum training requirements. Directive 2005/36/EC (1) consolidates the existing 15 directives, including both sectoral directives (with the exception of the lawyer’s sector) and directives covering the general system of recognition. This allowed an alignment of the principles common to all regulated professions, resulting in common definitions and common provisions concerning the effect of recognition, namely, the right to pursue a profession under the same conditions as nationals from the host Member State, making clear the distinction between the two systems of recognition: 1) automatic recognition of sectoral professional qualifications for which minimum training requirements have been harmonized and 2) selective recognition of the other professional qualifications.

In addition to this consolidation, the new directive has, to some extent, clarified the system for temporary provision of services which previously existed but only for certain ‘sectoral’ professions. Furthermore, the new directive reinforces administrative cooperation among the competent authorities of the Member States.

What are the major changes?
One of the major changes brought about by the new directive is that the scope of the general system of recognition has been extended to specific situations of ‘sectoral professions’ where, for different reasons, the migrant professional is not eligible for automatic recognition.

Before this directive went into force, the request for recognition in such situations was based on either Article 8 of Directive 93/16/EEC (in the case of non-common medical specialities) or Article 43 of the Treaty and the afferent case law. In the latter case the rights of migrant professionals were less favourable, as there was no timeline within which the competent authorities were obliged to make a decision on the request for recognition, and the possibility of appeal in the event of a negative decision was not guaranteed. The migrant professional was also at risk of being obliged to repeat some part of university-level training. The new directive makes clear what the migrant professional can expect from the competent authorities of the host Member States; i.e. only in cases of substantial differences between the training requirements of the host Member State and those already completed by the migrant professional may compensatory measures be imposed (in such cases, the migrant professional would in principle be offered a choice between an aptitude test or an adaptation period).

A more favourable system is now applicable to medical professionals in a number of situations. The title of a clinical microbiologist or infectious diseases physician is automatically recognized by all countries, in which these specialties exist since they are listed in Annex 5.1.3. of Directive 2005/36/EC. However, individuals with ‘non-common’ medical specialities are not eligible for automatic recognition because:

1) the speciality concerned is not among the 52 specialities listed in Annex 5.1.3 of Directive 2005/36/EC
2) either the original or the host Member State does not have a national title for the speciality listed in Annex 5.1.3. of Directive 2005/36/EC or
3) an individual’s status may be unclear, for example, an individual may be qualified as a clinical microbiologist but formally hold basic qualification as a pharmacist. Secondly, it applies to individuals from new Member States who may hold an ‘old’ medical qualification and are not eligible for automatic recognition (which requires proof of lawful and efficient exercise of medical activities for at least three consecutive years during the five years preceding the award of the certificate). Thirdly, it applies to individuals who acquired medical qualification in a third country that had previously been recognized by another Member State, and who subsequently practiced in this Member State for three years.

References
Directive 2005/36/EC has modernized the systems of recognition in view of establishment in a Member State other than the one where the professional qualification has been obtained, but has also put forward much clearer rules than the ones that used to be applied as far as the right to provide services in another Member State once a professional is legally established in the first Member State (in the case of pharmacists, this guarantee is new) (3).

**When is a professional considered to be providing services?**

The directive is very clear and applies only if the professional has physically moved into another Member State (4) (which of course excludes activities provided in the context of telemedicine).

**When is a service considered to be provided on a temporary or occasional basis?**

The directive calls for assessment on a case by case basis, especially concerning the duration, frequency, regularity and continuity of services (5), and it provides clear rules concerning the preconditions, procedures and timelines to be followed.

First of all, the new directive clearly states that if a professional wishes to provide services on a temporary or occasional basis in another Member State, the host Member State cannot impose restrictions for any reason relating to professional qualifications (i.e. in principle (6), the professional qualifications of a service provider who is legally established in another Member State cannot be challenged) (7). The host Member State may, however, require a service provider to make a yearly notification to the competent authority and, on the occasion of initial provision of services, or if there is a material change in the situation, Member States may require that the notification be accompanied by the following documents: proof of the nationality of the service provider; an attestation certifying that the holder is legally established in a Member State for the purpose of pursuing the activities concerned and is not prohibited from practising, even temporarily, at the time of delivering such attestation; and finally, evidence of professional qualifications.

The new directive does not require temporary professionals to register with professional bodies, unless only formally. As under the former authority of Directive 93/16/EEC, the service provider is subject to the rules of the host Member State governing professionals. However, the new directive clarifies that these rules, whether statutory or administrative, should be directly linked to professional qualifications, e.g. definition of the profession, specification of the activities that can be exercised, and consequences for the misuse of titles and serious professional malpractice, which are directly linked to consumer protection and safety (8). As previously, the service provider must maintain the professional title of the Member State of residence, making it clear to patients that the migrant professional is practicing in the host state temporarily and is permanently established in another Member State.

Finally, the new directive has strengthened the obligation of the Member States to co-operate on an administrative level, not only in the case of provision of services, but also in the exchange of information regarding disciplinary action or criminal sanctions. In order to facilitate communication among Member States, the IMS-system (Internal Market Information System) has been developed by the European Commission in an attempt to avoid the usual obstacles to communication among administrations, i.e. lack of identification of the counterparts, lengthy communication processes and language barriers. An electronic network will provide sets of standard questions that will be translated into all EU languages. A pilot project including doctors, pharmacists, physiotherapists and accountants will be initiated by the end of 2007.

**Relevance**

The extension of the scope of the general system to incorporate non-common medical specialities and pharmacy specialities should make the movement of clinical biologists within the European Union smoother and easier. In the context of specialized research, especially where research is underway primarily in a single laboratory, clinical biologists in Europe will definitely benefit from the provisions for enhanced and protected professional mobility provided by the new directive.
What Can the EIT Do for You?

The European Institute of Technology (EIT)

The creation of a European Institute of Technology was first suggested by José Manuel Barroso, President of the European Commission, in February 2005. At that time, the European Union was reviewing its Lisbon Strategy. In 2000, the heads of state and government, gathered in Lisbon, had pledged to make Europe the most competitive knowledge-based economy of the world by 2010. Half way through, it was clear however that very little had been achieved and that the EU needed to speed up the pace if it wanted to achieve its objectives. The EIT was thus a bid to boost the moribund strategy.

The mid-term review of the Lisbon strategy was indeed not unlike a health-check. In evaluating research and innovation, the conclusions were that whereas research was generally healthy and thriving, innovation was lagging behind. Europe is good at generating ideas; it can turn money into knowledge. But we find it difficult to turn this knowledge into money: to innovate - bringing new products and processes to the market. The MP3 was invented in Europe but it was developed and brought to the market elsewhere and we did not benefit from the financial rewards of our findings. The EIT’s main objective therefore will be to bridge the gap between research and innovation. It should create a system where the different actors are brought together and can interact and learn from each other to facilitate innovation as well as generate a more entrepreneurial spirit among researchers and scientists.

With this in mind, the Commission embarked upon a wide-ranging consultation with the various stakeholders, including universities, research centres and businesses. The initial idea presented to them was however to create an equivalent to the world renowned Massachusetts Institute of Technology (MIT). This was met by at best scepticism, at worst fierce opposition, notably from the universities and the Member States. They saw the proposal as a waste of already limited EU funds for research, implying that universities and research centres would compete for a smaller slice of a diminishing funding pie. The project also foresaw that the best departments or staff of existing institutions would join the EIT, thereby threatening the formers' very existence and the basis of their excellence.

Not surprisingly, the Commission was sent back to its drawing board. It presented an overhauled concept to the European Council in June 2006 and obtaining the latter’s agreement, started drafting a proposal for a regulation. As it stands today, the EIT will be a more virtual institute. It will be made up of a small Governing Board deciding on strategic priorities and of Knowledge and Innovation Communities (KICs). These will be comprised of partnerships of universities, research centres, big companies and small and medium enterprises (SMEs), and any other interested stakeholders. They will be organized around different themes, in line with the priorities of the institute. Their main objective will be to obtain concrete innovative products or processes within ten to 15 years. The focus on innovation will moreover be complemented and supported by a strong educational element. KICs’ partners will organize their work autonomously, each contributing what it can and sharing the benefits.

The text was adopted by the Parliament in September and the Council of Ministers, the Parliament and the Commission are currently ironing out the last outstanding issues to enable the institute to start early next year with two KICs.

What can the EIT do for research and especially for innovation in the field of Infectious Diseases? This is your decision as an actor involved in Clinical Microbiology and Infectious Diseases! Bearing in mind that the EIT will focus on applied research or R&D (fundamental research is supported by the Framework Programmes and the European Research Council), a society like ESCMID could call for a KIC dealing with infectious diseases. Whether you think that progress could be made in the way patients are cared for or in the way medication is delivered, a KIC, for example, could enable you to find the right partners (e.g. hospitals, public authorities or SMEs) to develop innovative products and processes - which in turn might enable fundamental research into infectious diseases to advance further. The European Research Council (ERC), launched officially last February in Berlin, could complement this process as its mission is to boost and support fundamental research.

To sum up, one might say that the EIT will of course not be a silver bullet, resolving all problems, but rather one element of the Lisbon strategy to help foster an innovation-friendly environment to boost our competitiveness. If you feel that Europe is strong in Clinical Microbiology and Infectious Diseases, but that it may not so far have exploited its potential fully, especially in terms of possible commercial applications, and that this field of research could benefit from interaction with different actors, then the EIT might be what you are looking for. The institute should become a flagship of European excellence in innovation. If your field can contribute, then get in touch!
The two greatest conferences in Microbiology and Infectious Diseases are held annually in Europe and the USA. The Scientific Report on the joint ECCMID / ICC in Munich, 2007 was recently published: ESCMID News 2007, issue 2, 28-33.

Subsequently the 47th Annual Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAC) was held on 17 – 20 September 2007, in Chicago, Illinois.

As promised in the above-mentioned ESCMID News article, the following is a collation of the most relevant publications in microbiology, infectious diseases and infection control for the past year, mostly culled from the above two conferences. Readers should refer to the ESCMID website (www.escmid.org) and the ICAAC website (www.icac.org) for full details of the programme, authors and their affiliation, abstracts where available, etc. Readers should also refer to original publications by the authors to verify scientific content.

### The Year in Clinical Microbiology

#### ECCMID / ICC 2007

This year saw significant advances in diagnostics, such as the use of re-sequencing and micro-arrays to detect novel respiratory pathogens. Some of the most relevant publications are cited below, which were discussed in Elisabeth Nagy’s (Szeged, Hungary) overview during the ECCMID/ICC Symposium, The Year in Clinical Microbiology.

### New viral pathogens (1)

Following on from coronaviruses and metapneumoviruses, human bocaviruses (HBoV) are the smallest of the DNA parvoviruses. They are the third or fourth most common lower respiratory tract infection pathogens (1.5-18.3%), most common at <1 year-of-age or in adults with underlying disease or immunosuppression. It is often a co-infection as illustrated by the following publication by Manning et al. The investigators compared the frequencies, epidemiological profiles, and clinical backgrounds of HBoV and PARV4 infections with those of other respiratory virus infections, by evaluating diagnostic samples referred to the Specialist Virology Laboratory (SVL) at the Royal Infirmary of Edinburgh (Edinburgh, United Kingdom). Anonymized samples and study subject information were obtained from the respiratory sample archive of the SVL. Samples were screened for HBoV, PARV4, B19, respiratory syncytial virus (RSV), adenoviruses, influenza viruses, and parainfluenza viruses by use of nested polymerase chain reaction.

HBoV infection was detected in 47 (8.2%) of 574 study subjects, ranking third in prevalence behind RSV infection (15.7%) and adenovirus infection (10.3%). Peak incidences of HBoV were noted among infants and young children (age 6-24 months) during the midwinter months (December and January) and were specifically associated with lower respiratory tract infections. HBoV infections were frequently accompanied by other respiratory viruses (frequency, 43%), and they were more prevalent among individuals infected with other respiratory viruses (17%), frequently adenovirus or RSV. All respiratory samples were negative for PARV4. The authors concluded that HBoV was a frequently detected, potential respiratory pathogen, with a prevalence and an epidemiological profile comparable to those of RSV. Identification of HBoV infections may be clinically important in the future.

### Pertussis resurgence (2)

The incidence of pertussis has increased, largely due to scares regarding whole cell vaccine. The following study from France investigates the use of real time PCR to enhance the diagnosis of pertussis.

Forty-one infants, aged <4 months, who were hospitalized with symptoms compatible with pertussis were investigated. Of these, 16 had Bordetella pertussis infection confirmed by real-time PCR. For four of these 16 patients, the initial sample was PCR-negative, but samples collected 5-7 days after the onset of infection were PCR-positive. PCR was also positive with samples from 15/16 families and 20/41 household contacts. Nine of the 20 positive household contacts were asymptomatic. Among the 16 infants with proven pertussis, apnoea was more frequent than in a control group for whom PCR was negative with both children and household contacts (69% vs. 28%). It was concluded that real-time PCR performed with samples from household contacts facilitates the diagnosis of infants suspected clinically of having pertussis, thereby enabling earlier treatment.
Resequencing microarrays [3]
Simultaneous testing for detection of infectious pathogens that cause similar symptoms (e.g., acute respiratory infections) is invaluable for patient treatment, outbreak prevention, and efficient use of antibiotic and antiviral agents. In addition, such testing may provide information regarding possible co-infections or induced secondary infections, such as virally induced bacterial infections. Furthermore, in many cases, detection of a pathogen requires more than genus/species-level resolution, since harmful agents (e.g., avian influenza virus) are grouped with other, relatively benign common agents, and for every pathogen, finer resolution is useful to allow tracking of the location and nature of mutations leading to strain variations. In this study, a previously developed resequencing microarray that has been demonstrated to have these capabilities was further developed to provide individual detection sensitivity ranging from 101 to 103 genomic copies for more than 26 respiratory pathogens while still retaining the ability to detect and differentiate between close genetic neighbours. The study demonstrated that this system allows unambiguous and reproducible sequence-based strain identification of the mixed pathogens. Successful proof-of-concept experiments using clinical specimens show that this approach is potentially very useful for both diagnostics and epidemic surveillance.

Bacterial vaginosis
Clinical diagnosis of bacterial vaginosis (BV) is still carried out by Amsel criteria and Gram stain microscopy using Nugent scores (4). However, many questions remain unanswered:
– Why the vaginal flora changes?
– What is the leading pathogen?
– Is Atopobium vaginae in fact more important than Gardnerella vaginalis?
– What is the role of Lactobacillus iners?
Some of these issues were addressed by the following Australian study: Women with abnormal vaginal discharge or odor were enrolled in a cross-sectional study (n=358); the proportion of those infected with G. vaginalis and A. vaginae was determined by polymerase chain reaction. Women with BV (Nugent score [NS] 7-10 or 4-6 with > or =3 Amsel criteria; n=139) were treated with oral metronidazole (400 mg twice a day for 7 days) and examined at 1, 3, 6, and 12 months or until they reached an NS of 7-10 and recurrence of A. vaginae and G. vaginalis infection was established.
A. vaginae and G. vaginalis were highly sensitive for BV - 96% (95% confidence interval [CI], 91%-98%) and 99% (95% CI, 97%-100%), respectively. However, A. vaginae was more specific for BV (77% [95% CI, 71%-82%]) than was G. vaginalis (35% [95% CI, 29%-42%]). G. vaginalis was detected in 100% and A. vaginae in 75% of women with recurrent BV; higher organism loads were present in women with recurrent BV. A. vaginae was rarely detected without G. vaginalis, and women in whom both organisms were detected had higher rates of recurrent BV (83%) than women infected with G. vaginalis only (38%) (P<.001).

The authors concluded that infection with A. vaginae is more specific for BV than infection with G. vaginalis. The higher recurrence rates in women in whom both A. vaginae and G. vaginalis were detected suggest that A. vaginae makes a significant contribution to BV. However, its etiological role remains unclear.

In a further study (5) from New Orleans, Louisiana, PCR was used to survey BV flora before and after metronidazole treatment. The species composition for pre-treatment patients was variable. Lactobacillus iners was prominent in all patients post-treatment. Atopobium vaginae concentrations were highest for patients who failed or responded incompletely to treatment and lowest for patients who were cured.

The following includes excerpts from Fernando Baquero’s (Madrid, Spain) talk during the ECCMID/ICC 2007 Symposium, The Year in Clinical Microbiology. At the beginning of his summary he took the opportunity to quote the late astronomer Carl Sagan, “Science is a way of thinking much more than it is a body of knowledge”.

Environmental resistome [6]
Over the millennia, microorganisms have evolved evasion strategies to overcome a myriad of chemical and environmental challenges, including antimicrobial drugs. Even before the first clinical use of antibiotics more than 60 years ago, resistant organisms had been isolated. Moreover, the potential problem of the widespread distribution of antibiotic-resistant bacteria was recognized by scientists and healthcare specialists from the initial use of these drugs. Why is resistance inevitable and where does it come from? Understanding the molecular...
diversity that underlies resistance will inform our use of these drugs and guide efforts to develop new efficacious antibiotics.

**New antibiotic: platensimycin [7]**

Fatty acids are essential for survival of bacteria and are synthesized by a series of enzymes including the elongation enzymes, beta-ketoacyl acyl carrier protein synthase I/II (FabF/B). Inhibition of fatty acid synthesis is one of the new targets for the discovery and development of antibacterial agents. Platensimycin is a novel broad spectrum Gram-positive antibiotic produced by *Streptomyces platensis*, which was discovered by a target-based whole-cell screening strategy using an antisense differential sensitivity assay. It inhibits bacterial growth by selectively inhibiting condensing enzyme FabF of the fatty acid synthesis pathway and was isolated by a two-step process, a capture step followed by reversed-phase HPLC. The structure was elucidated by 2D NMR and confirmed by X-ray crystallographic analysis of a bromo derivative. It was determined that potential reactivity of the enone moiety does not play a key role in the biological activity of platensimycin. However, cyclohexenone ring conformation renders for the stronger binding interaction with the enzyme. The isolation, structure elucidation, derivatization, and biological activity of 6,7-dihydroplatensimycin are described.

**Complex biological effects of antibiotics [8]**

Subtherapeutic concentrations of antibiotics have multiple non-killer effects on microbes, including up-regulating or down-regulating genes, motility, biofilm formation, etc.

It has been widely assumed that the ecological function of antibiotics in nature is fighting against competitors. This made them a good example of the Darwinian struggle-for-life in the microbial world. Based on this idea, it also has been believed that antibiotics, even at subinhibitory concentrations, reduce virulence of bacterial pathogens. Using a combination of genomic and functional assays, Linares et al. demonstrate that specific antibiotics (namely tobramycin, tetracycline, and norfloxacin) at subinhibitory concentrations trigger expression of determinants influencing the virulence of the major opportunistic bacterial pathogen, *Pseudomonas aeruginosa*. All three antibiotics induce biofilm formation; tobramycin increases bacterial motility, and tetracycline triggers expression of the type III secretion system. Besides their relevance in the infection process, those determinants are relevant for the ecological behavior of this bacterial species in natural, nonclinical environments, either by favouring colonization of surfaces (biofilm, motility) or for fighting against eukaryotic predators (cytotoxicity). The results support the notion that antibiotics are not only bacterial weapons for fighting competitors but also signaling molecules that may regulate the homeostasis of microbial communities. At low concentrations, they can even be beneficial for the behaviour of susceptible bacteria in natural environments. This is a complete change in the view on the ecological function of antibiotics with clear implications both for the treatment of infectious diseases and for the understanding of the microbial relationships in the biosphere.

**Novel mechanisms of resistance [9]**

The interaction of mechanisms of resistance within a single or multiple bacterial species can be complex. Aminoglycoside modifying enzymes inactivate fluoroquinolones; plasmid mediated quinolone-R was associated with CTX-M ESBLs; and metallo-beta-lactamases produced by *Klebsiella pneumoniae* and *Enterobacter cloacae* were associated with contemporaneous monoclonal and multiclional (respectively) hospital epidemics.

Tato et al. report the emergence and spread of metallo-beta-lactamases (MBLs) among enterobacterial isolates at Ramón y Cajal University Hospital (Madrid, Spain). During the period from March 2005 through September 2006, 25 patients (52% of whom were in the ICU) were infected and/or colonized with single or different MBL-producing Entrobacteriaceae isolates (*K. pneumoniae*, 14 patients; *E. cloacae*, 12 patients; *E. coli*, 1 patient; and/or *Klebsiella oxytoca*, 1 patient). Clonal analysis (XbaI pulsed-field gel electrophoresis) revealed that all *K. pneumoniae* isolates belonged to the same clone, but six patterns were found among the *E. cloacae* isolates. Carbapenems were affected to different degrees (minimum inhibitory concentration, < or = 1 to > 8 microg/mL), as were aminoglycosides and ciprofloxacin. The bla(VIM-1) MBL gene was present in all isolates; in addition, the bla(SHV-12) extended-spectrum beta-lactamase gene was detected in *K. pneumoniae* and *E. coli* isolates. The bla(VIM-1) gene was detected within a 4.0-kb class 1 integron (bla(VIM-1)-aaacA4-dfrH1-aadA1-catB2) in *K. pneumoniae* and *E. coli* and in a 2.5-kb class 1 integron (bla(VIM-1)-aacA4-aadA1) in *E. cloacae* and *K. oxytoca* isolates. The bla(VIM-1) gene was transferable (filter-mating) in 14 of 14 *K. pneumoniae* isolates, 4 of 11 *E. cloacae* isolates, and 1 of 1 *E. coli* isolates. A 60-kb plasmid belonging to the IncI1 group was detected in the epidemic *K. pneumoniae* clone. Plasmids of 300- or 435-kb belonging to IncH12 group were found among *E. cloacae* isolates. Thus, *K. pneumoniae*-MBL monoclonal epidemics coexisted with *E. cloacae*-MBL multiclional epidemics in hospitals. The spread of the bla(VIM-1) gene among Entrobacteriaceae was driven by clonal spread associated with intergeneric plasmid transfer with different class 1 integron platforms. The authors surmise that such complex epidemiology might anticipate endemcity and should be considered for the design of containment epidemiology strategies.
The Year in Antimicrobials and Chemotherapy
ICAAC 2007

Nephrotoxicity associated with high dose vs. standard dose vancomycin therapy
M. Nguyen, J. Wong, C. Lee, et al. (Los Angeles, USA)
The risk of nephrotoxicity is increased with higher-than-standard dosing of vancomycin. Vancomycin is known to increase the risk of renal damage, but most physicians do not consider the drug to have any significant renal effects when given alone and generally consider it to be safe. However, the drug is currently being prescribed more often and at higher doses than in the past.

Although the usual recommendation is to keep the blood levels of this drug between 5 mg/L and 15 mg/L, the recommended blood levels are higher – between 15 mg/L and 20 mg/L – for some infections such as meningitis, nosocomial pneumonia and ventilator-associated pneumonia.

The result has been that many hospitals now use higher doses of vancomycin, according to Megan Nguyen of Western University of Health Science in Pomona, California, and colleagues. In addition, as the rates of MRSA infection have increased, so have the rates of vancomycin use. Nguyen and colleagues evaluated rates of nephrotoxicity in 218 patients: 130 with blood levels of vancomycin >15 mg/L and 88 with blood levels between 5 mg/L and 15 mg/L.

They found that 18% of the patients with levels of vancomycin >15 mg/L had renal damage compared with 6% in those with lower levels.

Significant predictors of vancomycin nephrotoxicity were length of treatment (p = 0.016) and overall mean trough levels of the drug (p = 0.012). Three previous studies also found that higher vancomycin levels directly correlated with increased nephrotoxicity. In all of these studies, the risk of nephrotoxicity was significantly higher in patients with vancomycin levels >15 mg/L.

“These findings were especially alarming given that one of the studies showed nephrotoxicity to be as high as 58.8%,” the researchers commented. One limitation of the current study, they point out, was that it was retrospective and the clinical outcomes of the patients were not evaluated. Overall, Nguyen’s group believes it is ‘imperative’ that all patients receiving vancomycin be closely monitored for drug levels and that prospective studies are warranted to assess the risk-benefit of high-dose vancomycin.

Need for cidal vs. static antibiotics?
R. W. Finberg (Worcester, USA)
The concept that antimicrobial agents with bacteriocidal activity might be preferable to bacteriostatic agents has roots in clinical experience in the early antibiotic era. Studies performed in the 1940s and 50s suggested bacteriocidal agents might have advantages over bacteriostatic agents. The early experience with the treatment of endocarditis revealed the inability of penicillin alone to cure enterococcal endocarditis. These studies, indicating a role for synergistic antimicrobial therapies, defined the role of cidal drugs in the treatment of endocarditis. Small studies of patients treated for pneumococcal meningitis in the 1940s and 1950s suggested that treatment with agents that were antagonistic (the combination of a static and cidal agent) might lead to worse outcomes than either agent alone. The early experience demonstrating poor overall outcomes in patients with fever and neutropenia treated with aminoglycosides alone suggested that synergistic therapy might improve outcomes. While early studies suggested that outcomes might correlate with serum cidal activity, later analyses with large numbers of patients using cephalosporins with broad spectrum activity have not suggested a reason for the addition of aminoglycosides even in immunocompromized patients. Furthermore, while a given antimicrobial agent may have only static activity against a given microbe, it may be cidal for another. Different strains of the same organism vary in their ability to be killed (versus inhibited) by selected antimicrobial agents making general guidelines of limited use. Clinically, compelling data for the use of cidal as opposed to static agents exists only in the case of bacterial endocarditis and meningitis. In most other cases, issues related to dosing, spectrum, toxicity, and penetration into the involved site, are likely to be more important in the clinical approach to patients. Specific examples were presented.

Beta-lactam-quinolone hybrids
R. L. Then (Basel, Switzerland)
Many successful antibiotics such as the beta-lactams, the aminoglycosides, isoniazid and others bind to more than one target in the bacterial cell. A number of antibiotics are also metabolized within the bacterial cell, either to an inactive or to an active principle. The clinical usefulness of almost all antibiotics is finally limited by resistance development. Hence medicinal chemists have long sought ways to prevent resistance development. After C. O Callaghan and colleagues published their seminal paper on a new ‘dual action cephalosporin’ in 1976, several pharmaceutical companies applying the above principles engaged in programs linking an antibacterially active group to the 3'-position of a cephalosporin. Hydrolysis by a beta-lactamase would release this moiety to attack another intracellular target. Quinolones as the leaving group gained much attention and they were linked to cephalosporins, penicillins, penems, or carbapenems mostly via ester-, carbamate-, or tert-amine-bonds.
Ro 23-9424, desacetyl-cefotaxime linked to fleroxacin via an ester bond, was characterized in much detail and proceeded into phase I clinical

Most, if not all, antibiotics which have been developed for clinical use, act against one or just a limited number of defined targets. On the other hand, nature has developed a different strategy for its most widely used antibiotics, the host defense peptides (HDPs). Due to their amphiphilic properties, defensins and other classes of HDPs appear to act unspecifically and simultaneously interfere with various membrane-associated processes, disturb barrier functions of microbial membranes and are important modulators of innate immune responses. Interestingly, the low-potency, ‘dirty drug’ concept of amphipathic cationic HDPs has been conserved throughout evolution and HDPs retained activity in spite of permanent use.

With lantibiotics, a group of posttranslationally modified antibiotic peptides from Gram-positive bacteria, both strategies appear to be combined. In addition to activities based on amphipathy, lantibiotics act via specific targets which, in the case of nisin and related peptides, was identified as the cell wall precursor lipid II. Binding of lipid II can result in different antibiotic actions, sequestration of the precursor, inhibition of cell wall biosynthesis and, depending on the individual lantibiotic and the strain tested, in formation of lipid II-specific pores. When these mechanisms combine, high efficacy with minimal inhibitory concentrations in the sub-nanomolar range can be reached. However, lantibiotics may also be produced as a synergistic pair of peptides with individual functions in lipid II binding and pore formation. Finally, in addition to lipid II-mediated activities, nisin also induces cell wall lytic processes in staphylococci and inhibits outgrowth of bacterial spores. If appropriately studied, such multiplicity of activities may be found more frequently, particularly with antibiotic natural products of higher molecular masses. Obviously, nature has provided proof-of-principle for various combination strategies which may be exploited in future anti-infective drug design.

How many modes of actions for a successful antibiotic? [10]

H.G. Sahl (Bonn, Germany)

The following excerpts were taken from Robert Read’s (Sheffield, UK) talk during ECCMID/ICC 2007 in the symposium: The Year in Infectious Diseases.

Multi-drug resistant tuberculosis (MDRTB) [11]

Tuberculosis remains one of the major causes of death from a single infectious agent worldwide. In South Africa, during 2005 and 2006, 1428 patients were diagnosed with TB: 475 were culture positive; 39% were MDRTB; 36% were drug resistant; and 65% had no previous TB Rx and therefore were community-acquired. Of the MDRTB cases, two-thirds died at 30 days and 100% died six months after diagnosis. Palomino recently reviewed some of the recent developments for the rapid diagnosis and detection of drug resistance in tuberculosis. Recent advances in molecular biology and a better understanding of the molecular basis of drug resistance have provided new tools for rapid tuberculosis diagnosis.

Interferon-gamma release assays replace the 100-year-old tuberculin test and have a sensitivity of 80% and specificity of >90%:

- Quantiferon TB Gold (ELISA of peripheral blood)
- TB spot T (ELISPOT)

However no test distinguishes active from latent TB. Microscopic observation of drug susceptibility is a useful low-tech tool but requires training. On the other hand, the use of proteomic fingerprinting is a high-tech tool providing combinational bio-marking for TB. Other nucleic acid amplification techniques, both commercial and in-house, and non-molecular methods are being evaluated. The overall accuracy of most of these tests is prom-

SCIENCE AND EDUCATION 21


Klebsiella oxytoca as a causative organism of antibiotic-associated haemorrhagic colitis (AAHC) [12] AAHC is a distinct form of antibiotic-associated colitis in which Clostridium difficile is absent. Although the cause is not known, previous reports have suggested a role of Klebsiella oxytoca. Högenauer et al. studied 22 consecutive patients who had suspected antibiotic-associated colitis and who were negative for C. difficile. Of the 22 patients, six had findings on colonoscopy that were consistent with the diagnosis of AAHC, and five of these six patients had positive cultures for K. oxytoca. No other common enteric pathogens were found in the five patients. Before the onset of colitis, all five were receiving penicillin, and two were also taking the five patients. Before the onset of colitis, all five were receiving penicillin, and two were also taking nonsteroidal antiinflammatory drugs (NSAIDs).

All isolated K. oxytoca strains produced cytotoxin. K. oxytoca was found in 1.6% of the healthy subjects. In the animal model, K. oxytoca was found only in the colon of rats receiving amoxicillin-clavulanate in addition to being inoculated with K. oxytoca. In these rats, infection with K. oxytoca induced a right-sided haemorrhagic colitis that was not observed in uninfected animals that received amoxicillin-clavulanate, indomethacin (an NSAID), or both. The authors’ fulfillment of Koch’s postulates for cytotoxin-producing K. oxytoca suggests that it is the causative organism in at least some cases of AAHC. They conclude that infection with K. oxytoca should be suspected in patients with antibiotic-associated colitis who are negative for C. difficile.

Could green tea be useful in HIV therapy? [13]
The green tea flavonoid, epigallocatechin gallate (EGCG), has been proposed to have an anti-HIV-1 effect by preventing the binding of HIV-1 glycoprotein (gp) 120 to the CD4 molecule on T cells. Williamson et al. used nuclear magnetic resonance spectroscopy to examine the binding of EGCG and control, (-)-catechin, to CD4-IgG2 (PRO 542). Gp120 binding to human CD4+ T cells was analyzed by flow cytometry. Addition of CD4 to EGCG produced a linear decrease in nuclear magnetic resonance signal intensity from EGCG but not from the control, (-)-catechin. In saturation transfer difference experiments, addition of 5.8 micromol/L CD4 to 310 micromol/L EGCG produced strong saturation at the EGCG aromatic rings, but identical concentrations of (-)-catechin produced much smaller effects, implying EGCG/CD4 binding strong enough to reduce gp120/CD4 binding substantially. Molecular modelling studies suggested a binding site for EGCG in the D1 domain of CD4, the pocket that binds gp120. Physiologically relevant concentrations of EGCG (0.2 micromol/L) inhibited binding of gp120 to isolated human CD4+ T cells. The authors concluded that there is clear evidence of high-affinity binding of EGCG to the CD4 molecule with a Kd of approximately 10 nmol/L and inhibition of gp120 binding to human CD4+ T cells and that EGCG has potential use as adjunctive therapy in HIV-1 infection.

ICAAC 2007
The infectious disease impact of global climate change
A. J. McMichael (Canberra, Australia)
The long history of human infectious diseases is kaleidoscopic - and the tempo of change has recently accelerated. Over the past three decades much discussion has focused on the ‘emergence and resurgence’ of infectious diseases (ID) around the world. In the background lurks the increasingly worrying rise of antimicrobial-resistance. The longer narrative extends back to, and beyond, the parasites that first travelled with the post-australopithecine hunter-gatherers, and then the revolution

Aedes aegypti female after a blood meal. Aedes aegypti is a notorious vector of a dozen different virus types, such as Chikungunya, dengue and yellow fever. Scientists using computers to simulate the general circulation of the earth’s climate have predicted that rising global temperatures will increase the range of A. aegypti. Image courtesy of Paul I. Howell, MPH and Frank Hadley Collins [CDC]
in human-microbial relations ushered in by farming, the consequent rise of various human-adapted infections (malaria, influenza, tuberculosis, leprosy, etc.), and the amplification of infectious diseases by urbanization, and, in recent centuries, their spread by sea-faring empires. Dramatic shocks have occurred along the way - as in Europe, for example, with bubonic plague and syphilis. Then onto the era of squalid early industrialization where whole populations, especially the urban poor, were ravaged by smallpox, tuberculosis, measles and other diseases. And what are the developments today? H5N1 influenza, cholera and some other IDs go global; various new (mostly viral zoonotic) infectious diseases emerge; other microbial surprises arise from intensified food production; and global climate change may be starting to reshape the boundaries and seasons of many infectious diseases.

This ever-changing pattern of ID reflects diverse increases in intensity and scale of human activity: mobility, trading, inter-population contacts, altered social relations (sexual networks, drug use), technologies, and the sheer scale of land clearance, other environmental incursions, biodiversity losses and climate change. Many ID are sensitive to climatic conditions - particularly insect-borne infections and those spread via contaminated food and water - and hence climate change is now widely anticipated to affect patterns of ID occurrence. Globally, malaria, dengue fever, cholera, and food-borne infections are of particular concern. Some early evidence suggests that recent shifts in patterns of tick-borne encephalitis in Sweden, schistosomiasis in China, cholera in Bangladesh and malaria in parts of Africa signal an influence of climate change. Meanwhile, methodological and professional tension inevitably arise. Some argue that climatic conditions may redefine the limits, but, on the ground, the more localized influences of sanitation, housing, water storage, vaccination, mosquito control etc. are the key. And the scenario-based modelling of future changes in ID patterns is complex.

The recent advent of human-induced climate change has helped focus new attention on the need to develop a more 'ecological' and systems-based approach to this general topic. This will help us to understand better how the interplay of evolutionary, ecological and social processes influences ID patterns. Molecular biology, often a seeming diversion from bigger issues, can enrich our understanding of ecological pathways. Epidemiologists should apply this larger perspective to studying, anticipating and responding to ID in this global 'anthropocene'.

Optimizing sepsis outcomes in the ICU: lessons from the Cooperative Antimicrobial Therapy of Septic Shock (CATSS) database [14]
A. Kumar (Winnipeg, Canada)

Antibiotic Therapy: The importance of antimicrobial timing considerations in septic shock, developed in cooperation with the Infectious Diseases Society of America (IDSA).

A retrospective analysis of critical determinants of outcome in septic shock patients was performed using a newly developed database. Over 5000 cases of septic shock in over 20 ICUs in 15 cities and three countries have been assessed. These data suggest that the delay in initiation of effective antimicrobial therapy, following the onset of hypotension, is the central therapeutic variable associated with septic shock mortality. The study also demonstrates the existence of excessive delays in delivery of effective antimicrobials in patients with septic shock. Median time to delivery of appropriate antimicrobial therapy was 6 hours. Only 14.5% of all patients who had not received effective antimicrobials before shock received them within the first hour of documentation of onset of recurrent or persistent hypotension. Only 32.5% had received them by 3 hours post-hypotension onset and 51.4% by 6 hours post-onset. Even 12 hours after the first occurrence of recurrent or sustained hypotension, 29.8% of patients had not received effective antimicrobial therapy. The impact of these delays was substantial. For every additional hour before effective antimicrobial initiation in the first 6 hours after post-hypotension onset, survival dropped an average of 7.6%. Initiation of effective antimicrobial therapy within the first hour was associated with 79.9% survival. With effective antimicrobial initiation between the first and second hour after hour post-hypotension onset, survival had already dropped to 70.5%. At initiation between 5 and 6 hours after hypotension onset, survival was just 42.0% and at 9-12 hours 25.4%. Almost 30% of the variance in outcome of septic shock patients could be explained by delays in antimicrobial therapy. Other antibiotic-related factors accounted for an additional 20% of the variance. Rapidity of fluid resuscitation accounted for <2% of the variance in outcome.

The following excerpts are from the session with the above title at ECCMID/ICC 2007 given by W.H. Seto (Hong-Kong) and C. Ruef (Switzerland).

Pandemic preparedness [15]
Influenza pandemic preparedness planning is critical for reducing human suffering and negative effects on the economy and society. The Center for Disease Control and Prevention (CDC) is working to ensure a rapid, efficient, and successful response to an outbreak if, when, and where it appears. The CDC’s context for strategic planning is based on experience with seasonal influenza and what is
known about past influenza pandemics. From a public health perspective, pandemic preparedness can be achieved with a plan that builds a network of shared responsibility from the local to the global level, with a focus on saving lives with vaccines, antiviral drugs, medical supplies, containment, and communication. The US community guidance for pandemic flu mitigation can be found at www.pandemicflu.gov/plan/community/mitigation.html. It includes non-pharmacologic interventions.

The decision on what action to take is based on Pandemic preparedness

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Guidance on infection control measures, including those for workplaces, may be accessed at www.pandemicflu.gov.

**MRSA and hand hygiene**

McBryde et al. estimated the transmission rate of MRSA (16) in an ICU in an 800-bed Australian teaching hospital and predicted the impact of infection control interventions. The mean number of secondary cases arising from the ICU admission of colonized patients, also called the ward reproduction ratio, R(w), was estimated to be 0.50 (95% CI 0.39-0.62). The attack rate was 1 MRSA transmission per 160 (95% CI 130-210) uncolonized-patient-days. Observed post-contact hand hygiene/patient/day was made, on average, 22 direct and 107 indirect contacts without adequate hand hygiene/patient/day. On average, each patient was contacted directly 159 (95% confidence intervals (CI) 144-178) times and contacted indirectly 191 (95% CI 174-210) times/day. Observed post-contact hand hygiene rates were 43% for direct contacts and 12% for indirect contacts. Staff contacting more than one patient during routine care, who carry the highest risk of transmitting infection between patients, made, on average, 22 direct and 107 indirect contacts without adequate hand hygiene/patient/day.

According to Salgado et al. (18), clinical microbiological cultures (CMCs) failed to identify 85% of MRSA-colonized patients. Because many studies have shown a decrease in the transmission of MRSA from colonized patients for whom contact precautions, rather than standard precautions, are used, these findings suggest that failure to identify colonized patients and to use contact precautions may be an important reason for the increasing rate of nosocomial MRSA infection in hospitals.

**PCR screening for MRSA (19)**

This screening on admission to critical care units is feasible in routine clinical practice, provides quicker results than culture-based screening and is associated with a significant reduction in subsequent MRSA transmission. Cunningham et al. used the IDI MRSA PCR test to screen 693 patients admitted to a critical care unit in Plymouth, UK. The overall carriage rate on admission to the unit was 7.0%. Culture results were available in three working days, PCR results within one working day. The mean incidence of MRSA transmission was 13.89/1000 patient days during the culture phase and 4.9/1000 patient days during the PCR phase (relative risk reduction 0.65, 95% CI 0.28-1.07).

**The Six Sigma process (20)**

In conclusion, MRSA screening, preferably using PCR based methodology, should be implemented in Europe. Hand hygiene is the most effective intervention for reduction of MRSA transmission. The Six Sigma process should be used to examine hand hygiene practices (especially with regard to indirect contact) and increase compliance with the hand hygiene recommendations.
ICAAC 2007

Alcohol rub, antiseptic wipes inferior at removing Clostridium difficile

M. Oughton (Toronto, Canada); J. Boyce (New Haven, USA)

Old-fashioned soap and water are better than antiseptic wipes and alcohol rubs in removing C. difficile, according to a study by McGill University researcher Matthew Oughton.

Oughton brewed up a non-toxigenic strain of C. difficile to create a standard batch (C. difficile colony count 5.15 log10 colony forming units [CFU]/mL, with 62% spores) of pathogen and used it throughout the two studies. One study used a latex glove with C. difficile–laced 'glove juice', the other a hard tile surface, to first measure transfer of the pathogen to hands and then the efficacy of the six interventions at reducing it.

In the glove study, the no-handwashing group found 3.8 log10 CFU/mL surviving the procedure; warm water and plain soap left 2.0 log10 CFU/mL; cold water and plain soap, 2.0 log10 CFU/mL; warm water and antibacterial soap, 2.4 log10 CFU/mL; antiseptic hand wipes, 3.2 log10 CFU/mL; and alcohol hand rub, 3.8 log10 CFU/mL.

The surface contamination study found an even greater differential in outcomes between the groups, using a measure of C. difficile colony count per plate, yielding 48.8, 0.4, 0.4, 0.3, 8.0, and 37.7 units for no handwashing, warm water and plain soap, cold water and plain soap, warm water and antibacterial soap, antiseptic hand wipes, and alcohol hand rub, respectively. Oughton stated, „All of the interventions except for the alcohol hand rub decreased the colony counts by a large number.“

He concluded, „Plain soapy water was superior to antiseptic hand wipes and alcohol hands rubs.“ He suggested that the small effect for antiseptic hand wipes seen in the surface contamination study might come from „moving the C. difficile from the touching surfaces of your hand to nontouching surfaces, which may be better than not washing at all.“

John M. Boyce, chief of the infectious disease section at the Hospital of Saint Raphael in New Haven, Connecticut, explained that reduction of C. difficile on contaminated hands comes from the friction involved with rinsing and drying that occurs during handwashing — it is not a result of an antiseptic agent. „Therefore, it comes as no surprise if alcohol hand rubs, which do not require rinsing or mechanical drying, are shown to be less effective than handwashing“ in reducing levels of the pathogen.

Could the increased use of alcohol hand rubs, if at the expense of less handwashing, help to explain the increased outbreaks of C. difficile in hospital settings? Dr. Boyce does not think so. A study at his own hospital, published in 2006, „showed that the incidence of C. difficile cases did not increase over a period of three years, despite a 10-fold increase in the use of alcohol-based hand rubs in our facility.“ Other studies have found similar results. In July 2005 the CDC recommended „using only soap and water for hand hygiene when caring for patients with C. difficile–associated disease; alcohol-based hand rubs may not be as effective against spore-forming bacteria.“
Review of the 6th ESCMID Summer School 2007 in Suceava, Romania

Roxana Filip, Director of the 6th ESCMID Summer School, Member of the ESCMID Education Committee, roxana_filip@yahoo.com

Javier Garau, ESCMID President-elect and Secretary General, Former Education Officer, jgarau@garmar.e.telefonica.net

This year the 6th edition of the ESCMID Summer School was held from 1 to 6 July 2007 in Suceava, Romania. Organized by the ESCMID Education Committee, the Summer School was hosted by the Stefan cel Mare University of Suceava, Romania and was locally directed by Roxana Filip, member of the Education Committee) and Corina Stanescu (local organizer).

The Summer School followed the well-tried format of morning lecture sessions and the interactive afternoon programme in small groups. The record number of 53 participants from 18 countries, working in the field of Clinical Microbiology and Infectious Diseases, struck an excellent balance between the two specialties, which stimulated fruitful discussions during the entire programme. In the morning sessions, dedicated experts covered the five major chapters in their lectures:

- antimicrobial resistance
- microorganisms and infection pathogenesis
- major clinical syndromes
- immunocompromized hosts
- epidemiology, infection control and public health

Upon selection by the Education Committee, participants presented medical cases from their professional environment, which spurred exchange of experiences from the different European countries. In the afternoon, the well-versed facilitators Roberto Cauda (Rome), Javier Garau (Barcelona), Luis Martínez-Martínez (Santander), Laurent Poirel (Paris) and George Schmidt (Geneva) discussed educational medical cases in small groups with nine to ten participants.

ESCMID supported 18 participants with an attendance grant covering the full tuition fee. The financial support of the Summer School with unrestricted educational grants from Abbott...
Laboratories Romania, Boehringer Romania, GlaxoSmithKline Romania, Merck Sharp and Dohme Romania, and Roche Romania is gratefully acknowledged.

A diverse social programme presented the cultural richness of the Bukovina region. It included a welcome dinner with superb live music, a half-day trip to two monasteries near Suceava - Voronet and Manastiera Humorului, included in the UNESCO World Heritage List for their well-preserved murals – followed by a typical Romanian dinner in a natural park. It provided the perfect opportunity to experience an evening of Romanian hospitality: fine food and drink accompanied by typical music and dance. On the final evening the participants immersed themselves in historical Romania with a barbecue festivity in a village of ancient houses adjacent to the impressive Suceava Fortress.

During this week, the atmosphere between participants, facilitators and speakers was open, encouraging and relaxed, facilitating the informal exchange with such a prestigious faculty. Everyone departed with up-to-date scientific knowledge, a team building experience and extensive personal-scientific contacts. This was reflected in the written evaluation completed anonymously by all the participants at the end of the week and also in the final Summer School evaluation. Fulfillment of the ESCMID Summer School aim to facilitate knowledge exchange and networking was met. For the first time the Summer School is reaching beyond its participants through published webcasts of the expert lectures in its Online Lecture Library (www.escmid.org/library), which can be accessed free of charge by all ESCMID members.

In its sixth consecutive year, the Summer School proved to be a highly successful project. We hope that the participants of the Suceava Summer School left Romania with unforgettable memories to inspire them to return as tourists and will spread the Summer School word among their colleagues for the next editions.

For many of us it was the first opportunity to speak in English in front of renowned specialists in the fields of Clinical Microbiology and Infectious Diseases. The most impressive aspect of the Summer School for me was the advantage of meeting people from specialists the two areas – the clinicians and microbiologists – in one place. This allowed us to exchange knowledge and experiences and to talk about problems, which we encounter during our daily work. I have taken home new knowledge, which I anticipate to be very useful for my work, new friendships with people from all over Europe and have enjoyed the incredible atmosphere of Romania, created by the organizers. Thank you for this experience and see you next year in Germany.

Marek Juda, Lubin, Poland, marek.juda@am.lublin.pl
A Modern Approach to the Management of Sexually Transmitted Diseases

Yulia Belkova, MD, PhD, Smolensk, Russia, yuliya.belkova@antibiotic.ru

The 45th ESCMID Postgraduate Education Course, *A Modern Approach to the Management of Sexually Transmitted Diseases (STDs)*, was held from 7 to 8 September in St. Petersburg, Russia. The course was jointly organized by ESCMID, the Interregional Association of Clinical Microbiology and Antimicrobial Chemotherapy (IACMAC) and the Italian ESCMID-affiliated Societies: AMCLI, SIC, SIM, SIMIT and SIV in cooperation with the Italian and Russian chapters of the Alliance for the Prudent Use of Antibiotics (APUA).

The importance of the cooperation between the Societies was stressed by Giuseppe Cornaglia, ESCMID President, and by Roman Kozlov, IACMAC President. While welcoming the participants Roman Kozlov remarked that the present course was the first educational event dedicated to STDs organized in cooperation with ESCMID in Russia, and expressed the wish for Russia to be the venue of many future events of this type.

The Course was developed for everyone interested in STDs diagnosis and management and attracted the attention of many postgraduate students and specialists from Russia, Italy, Switzerland, Greece, Estonia and Romania. The lecturers were from Italy, Switzerland, Slovenia and Russia.

The Course combined lectures, discussions and demonstrations to enable the participants to be fully confident in gaining the highest level of knowledge in STDs. Each lecturer presented important practical information in his/her own presentation style, which gave the course a lively character.

Personally I found the course inspiring and useful for daily practice. The second day of the event was of most interest to me, especially Giorgio Pali’s (Padua, Italy) and Alberto Matteelli’s (Brescia, Italy) presentations dedicated to herpes simplex infection as well as human papillomavirus infections. It was the most useful part for me because viral STDs are currently highly prevalent. The reports were very well prepared. Very difficult treatment problems were presented in a structured and clear manner, which also provided new insight into understanding the topic.

Another very important problem that held the attention of the whole audience and led to heated discussion afterwards was the problem of diagnosis and management of infections due to *Chlamydia*, *Mycoplasma* and *Ureaplasma* covered by Mikhail Gomberg (Moscow, Russia). George Schmid (WHO, Geneva, Switzerland) reported on the intervention and control approaches for STDs as well as the modern approach to diagnosis and treatment of bacterial vaginosis. I actually would have liked to spend more time on all topics, especially on the presentation about topical and systemic therapies of STDs by Francesco Scaglione (Milan, Italy) that gave a rather good idea about existing approaches to topical treatment of some STDs as well as the conditions, under which it could be used.

I would also like to mention the lectures on the role of clinical microbiology laboratories in diagnosing and monitoring STDs by Enrico Magliano (Milan, Italy), modern aspects of diagnosis and treatment of genital candidiasis by Nikolay Klimko (St. Petersburg, Russia), current treatment of gonococcal infection by Sergey Sekhin (Smolensk, Russia), current epidemiology and management...
strategies of syphilis by Marco Cusini (Milan, Italy) and STDs in pregnancy by Mario Poljak (Ljubljana, Slovenia) that were of great interest to me.

All the lectures gave rise to lively discussions involving both students and lecturers. After the lectures some participants gave short presentations on real life cases from their own experience.

The integration of academic lectures and practical case studies provided us with optimal up-to-date scientific insight and enabled intense knowledge transfer. I can certainly say that the course inspired me in my work and gave me plenty of material for further investigation.

In my opinion the course was highly beneficial as an educational event and presented a great opportunity to meet an international group of specialists in the field. I would like to thank the organizers for allowing me take part in this activity. On behalf of the students who received attendance grants I would like to express our gratitude to ESCMID for financial support towards attending this course.
This summer the 42nd ESCMID Postgraduate Education Course, dedicated to the role of anaerobic bacteria in infections, diagnostics, antibiotic resistance and new therapeutic options, was held from 2 - 4 June 2007 in Szeged, Hungary. Thirty-nine participants attended the three-day course, 18 of whom received ESCMID financial support, and 19 countries from Europe, Australia and the USA were represented.

The course was organized by two ESCMID study groups, both of which are involved with human pathogenic anaerobic bacteria and their resistance problems. The ESCMID Study Group for *Clostridium difficile* (ESGCD) carries out research concerning the pathogenesis, resistance and spread of *Clostridium difficile*, the causative agent of nosocomial diarrhoea, and the ESCMID Study Group for Antibiotic Resistance of Anaerobic Bacteria (ESGARAB) has organized several Europe-wide surveillance studies on antibiotic resistance development in different clinically important anaerobic pathogens. The isolation and identification of anaerobes and the determination of their antimicrobial susceptibilities are as important as they are for other pathogenic bacteria and should be brought to the attention of young microbiologists working in routine-practice laboratories, making these scientists aware of the importance of this often neglected part of the routine bacteriology.

The course took place under the auspices of the Institute of Clinical Microbiology, University of Szeged, Hungary which hosts the National Reference Laboratory for Anaerobes. The academic staff of the Institute provided technical support and gave several main lectures.

The faculty of the course was from six European countries (Finland, Germany, Hungary, Slovenia, Sweden, the UK) and the USA and the topics of the lectures included:

- the main clinical situations in which anaerobic bacteria may have a pivotal role in the development and outcome of infections
- the role of anaerobes as normal flora in humans
- special infections involving anaerobes, e.g. bacterial vaginosis, chronic prostatitis, diabetic foot ulcer, parodontitis as a focal infection, Lemmier’s syndrome
- new information concerning the most prevalent nosocomial enteric infection – diarrhoea caused by *C. difficile
- practical knowledge concerning the management of samples e.g. successful and cost-effective isolation and identification
Impressions from a Course Participant

The first day of the Postgraduate Course on Anaerobic Infections was dedicated to *Clostridium difficile*. Ian Paxton from the UK, opened the session, followed by Maja Rupnik from Slovenia. Both speakers pointed out the significant role of *C. difficile* in enteric disease and focused on the hypervirulent strain toxinotype III and ribotype O27. They also referred to the diagnosis of *C. difficile*-associated disease using conventional and molecular techniques. The day ended with a lecture by Mike Cox from the USA, which covered general anaerobic microbiology.

The second day started with a presentation by Elja Könnönen from Finland who discussed the flora of the oral cavity as well as oral anaerobes in local and distant infections. Carl Eric Nord from Sweden then spoke about the role of anaerobic bacteria as normal flora members and their very interesting role as probiotics in clinical medicine. The day continued with a lecture by Elisabeth Nagy who presented the challenge of the diabetic foot, both for the laboratory and the clinical specialist, followed by Edit Urbán from Hungary who discussed the differentiation of anaerobic bacteria, focusing on cost effectiveness. During the afternoon of the same day Elisabeth Nagy discussed the clinical relevance and significance of blood culture for anaerobes, while Jon Brazier, from the UK, talked about the uncommon anaerobic pathogens in life threatening conditions.

The last day started with two speakers. First, Arne Rodloff from Germany spoke about resistance problems in anaerobes and emphasized the importance of MIC and breakpoint determination and the efforts being made in this area by EUCAST. The resistance of *Bacteroides* spp. to imipenem and metronidazole, as an increasing problem in the treatment of severe infections, was the topic of the second speaker, József Sóki from Hungary. Next, Georg Conrads from Germany reviewed all the available molecular methods and their usage in diagnostics and typing of anaerobic bacteria and then Eija Könnönen presented the new taxonomy of anaerobes and posed the question of the necessity to adhere to them. Elisabeth Nagy opened the afternoon session with the controversial issue of bacterial vaginosis and related infections, and Mike Cox closed the course with an entertaining as well as educating system called The Anaerobe Educator.

This brief report about the content of the course is incomplete without mentioning the extremely generous hospitality of Elisabeth Nagy and her colleagues. All the participants were impressed by the magnificent city and surrounding area, and the delicious Hungarian food. We hope to have the opportunity to visit the city again in the near future.

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Bacterial Molecular Typing – A Practical and Theoretical Course

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The first question I was asked when I told someone I am ‘the one’ to write a short report on the 40th ESCMID Postgraduate Education Course was “Where will you find the ideas?”. This has never been a problem for me. Actually, despite the fact that it is several weeks after the Course, I still have so many memories and ideas swirling in my head and it is really hard to focus on just one of them.

The 40th ESCMID Postgraduate Education Course devoted to bacterial molecular typing was held at the Instituto de Tecnologia Quimica e Biológica in Oeiras, Portugal from 29 April to 4 May 2007 and organized by H. de Lencastre, M. Aires de Sousa, R. Sá-Leão, A. Van Belkum and P. Tassios on behalf of the ESCMID Study Group for Epidemiological Markers (ESGEM). The Course consisted of a theoretical section and a practical module dedicated to molecular typing of bacteria using as model organisms *Staphylococcus aureus* and *Streptococcus pneumoniae*. The aim of the theoretical part was to give an overview of the most recent typing methods and results, especially of how to ‘convert’ data into knowledge, as well as of basic epidemiology. The applied module consisted of the most useful and recommended techniques known so far for molecular typing of *S. aureus* and *S. pneumoniae*, such as pulsed-field gel electrophoresis – PFGE – (still being the gold standard and the most widely used method for molecular typing of many bacteria), multilocus sequence typing – MLST – (an increasingly popular sequence-based typing method for both prokaryotic and eukaryotic microorganisms), *spa* typing (typing method that has been proposed as an alternative to PFGE and MLST for *S. aureus*) and SC-Cmec typing (a very important tool for the characterization of MRSA clones, which is now routinely performed in several laboratories).

Most of the participants (24 altogether) were basic researchers such as (molecular) biologists, microbiologists and biochemists working in research and clinical laboratories worldwide as well as clinicians.

A large number of countries (overall 17) from four different continents were represented. We worked together with colleagues from all parts of Europe, Brazil, Singapore and New Zealand.

Regardless of a quite intense schedule with morning lectures or laboratory work starting at 8:00 am and afternoon lectures or laboratory work ending at 6:00 pm, the organizers also found time for excellent social events such as a guided tour to Sintra which is an extremely beautiful town with a truly unique castle and two palaces.

This molecular typing Course was highly praised by all participants and we appreciated the contribution of local organizers especially Hermínia de Lencastre, Marta Aires de Sousa and Raquel Sá-Leão, who were not only outstanding speakers and instructors, but were always open to questions and debate. The participants evaluated this Course as a very useful and educational opportunity for our professional careers, providing us with the opportunity to expand collaboration with other scientists from different parts of the world.
June 2007 saw the second ESCMID visit to China. The Chinese Medical Association (CMA), which is the largest medical association in China, hosted two representatives from ESCMID in a three-city tour that was completed in five days. Giuseppe Cornaglia, ESCMID President, and I gave talks and met colleagues at three different cities in three consecutive conferences, in Chengdu, Beijing and Shanghai. The presentations were relayed by satellite to neighbouring cities and simultaneously translated by academic colleagues from Beijing.

We as ESCMID representatives presented the highlights of the ECCMID 2007 conference programme, in particular covering topics such as treatment of severe bacterial infection, treatment of resistant infections and recent discoveries in infectious diseases. We had exceptionally useful discussions with Chinese colleagues on subjects ranging from emerging viral infections to the organization of services in microbiology and infectious diseases within the People’s Republic. In Beijing the team was hosted by Aixia Wang of the Beijing Union Medical College who was the first physician to recognize a case of AIDS in mainland China. She gave a fascinating account of how the diagnosis was made by careful history taking and by deft immunological work during the era before the country was able to undertake routine HIV testing.

One of the striking impressions from this visit was the rapid advance of the Chinese infrastructure and economy. In addition, medical care in China appears highly advanced and physicians have access to an impressive array of pharmaceuticals. One surprise discovery for the visitors was that health care is not free to all Chinese citizens at the point of need, a situation that may rapidly evolve in the face of the Chinese industrial revolution.

In Shanghai the team was hosted by Professor Fu Wang of the Shanghai Medical University and the talks by the ESCMID representatives were complemented by a presentation on the current situation and mechanisms of Gram-negative resistance in China given by Yunsong Yu of the First Affiliated Hospital of Zhejiang University.

Altogether, the visit resulted in closer relations between ESCMID and the Chinese Medical Association. Further visits are planned to enhance this relationship and ESCMID is taking steps to make sure that Chinese doctors visiting ECCMID are given all possible support to make their visit comfortable and productive.
Focus on Lower Respiratory Tract Infections

Roger Finch, Co-chair GRACE Education and Curriculum Committee, rfinch@nottingham.ac.uk

The first two GRACE Workshops took place in Prague from 22 – 24 October 2007 and covered the issue of Lower respiratory tract infections: Current concepts in pathogenesis, microbiology, epidemiology and economic impact. The topics were drawn from the GRACE Curriculum developed by the GRACE Education and Curriculum Committee (Workpackage 12), led by Roger Finch and Francesco Blasi for ESCMID and ERS, respectively. A shared session focused on host-pathogen interaction in the lung and was followed by two separate workshops which dealt with The bacteriology of respiratory tract infections and The epidemiology and economic impact of common respiratory infections. The presentations were outstanding and much appreciated by the delegates, who were both science and medical graduates from the specialties of Primary Care, Clinical Microbiology and Infectious Diseases.

Shared Session: Host-pathogen interaction in the lung

Catherine Greene opened the plenary with a review of the diverse nature of host defences within the lung divided into innate and adaptive immunity. The cilia and mucus entrapment provide a firstline of defence. Mucin is composed of complex polymorphic glycoproteins, notably Muc5AC and also Muc5B. Surfactant is also central at the air-liquid interface by maintaining lung homeostasis. Four surfactant proteins have been identified. Critical to the detection of microbial pathogens are the Toll-like receptors (TLR) which have both microbial and host derived ligands. In relation to bacterial and virus recognition, two families of cytosolic receptors – Nod-like and RIG-like helicases have been identified.

Peter Hermans and Ralf Schumann emphasized the spectrum of host-pathogen interactions in relation to microbial colonization and invasion. Adhesion and immune evasion are critical to host cell entry and are pathogen variable. The genetic control of adhesion and invasion of Streptococcus pneumoniae have been well characterized where the capsule, cell wall proteins and pneumolysin play critical roles. TNF-alpha and IL-1 appear to be locally produced in acute pneumococcal pneumonia. In chronic lung infection, such as COPD, the host response is less well defined, and a plethora of bacteria and viruses play a role.

Tobias Welte further explored host defences and acute lung infections emphasizing the importance of innate immunity and pathogen-associated molecular patterns (PAMP). Pathogen recognition receptors (PRR) are expressed constitutively and are germline encoded and independent of immunological memory. These in turn lead to inflammatory
The host response to chronic lung infection (Gernot Rohde) reviewed the manner in which bacteria evade clearance by the airways by impairing mucociliary function, destroying locally-produced immunoglobulin, modifying immune cell function, and avoiding immune surveillance which are linked together in the ‘vicious circle hypothesis’. Examples of chronic lung infection include latent or clinically silent viral or Chlamydia pneumoniae infection, bacterial colonization in cystic fibrosis, and COPD and tuberculosis. Inflammatory cells and inflammatory mediators have been investigated in COPD with clear differences from controls in relation to viral infection of the lung. In the case of bacterial infection, myeloperoxidase, elastase, leukotriene and IL-8 activity correlate with bacterial load.

Mycobacterium tuberculosis is a very specific example of chronic lung infection. Robert Bals emphasized the key features. Latency is the result of persistence in macrophage phagosomes, which is a function of specific latency genes. The role of interferon-gamma as well as TNF and CD4 cells in protecting against mycobacterial infection is supported by mouse knock-out studies. Cathelicidin causing macrophage inactivation of M. tuberculosis appears to be genetically determined.

Miguel Camará reported on the role of bacterial quorum sensing (QS) in lung disease. Bacteria have sophisticated cell-to-cell communication systems which are population determined and allow organisms to adapt to their environment. Families of quorum sensing signal molecules, such as the N-acylhomoserine lactones (AHLs) have been well studied in Gram-negatives. In Gram-positives, butyrolactones and peptide molecules play a role. Sophisticated regulatory pathways exist which operate through signal transduction and gene expression. Cystic fibrosis provides a useful model for the study of quorum sensing in Pseudomonas aeruginosa, AHL and alkyl-4 quinolones can be detected in sputum. QS also appears to regulate biofilm maturation. Host defences against AHLs include lactonolysis and the peroxidase enzymes in relation to AHL degradation. The therapeutic potential of QS blockers is under investigation. For example, garlic is known to affect biofilm formation.

Workshop 1: The bacteriology of respiratory tract infections

Mark Woodhead overviewed the microbial epidemiology of community-acquired LRTI. The definitions of the various syndromes are available in the ERS guidelines, which were produced in collaboration with ESCMID (www.escmid.org/guidelines). In relation to the many published studies, it is important that confounding factors are addressed, such as sampling of patients who had received antibiotics before admission; the impact of epidemic Mycoplasma pneumoniae; age and site of care (ICU, hospital ward or community) as well as the influence of the repertoire of tests. Atypical pathogens are rarely linked to acute exacerbations of cystic fibrosis, and COPD and tuberculosis. Infl ammatory response within the lung is clearly increasing. Of interest is that the induction. Polymorphisms among cytokines are in-
of COPD, whereas acute bronchitis is predominantly viral in nature.

The current and future microbiological laboratory investigations of LRTI reviewed by Greet Leven emphasized the value of a diagnosis in terms of targeted and appropriate therapy, as well as the importance of surveillance support and outbreak recognition. Rapid methods which provide information within a few hours complement conventional sputum and blood culture. The value of rapid urine antigen testing for Legionella and pneumococci is well established, likewise fluorescent antibody tests for viral pathogens, such as influenza and RSV. Legionella antigen testing allows targeted therapy.

Enzyme immunoassay immunofluorescence, as well as PCR testing is increasingly applied to respiratory samples. The quality of specimens is crucial and has been clearly demonstrated, as in the case of RSV, where flocked swabs have increased sensitivity. The future simplification and cost reduction of such tests will make them more attractive in the routine setting.

The biology and genetics of Streptococcus pneumoniae was reviewed by Birgitta Henriques-Normark. Capsular serotype patterns in adults and children can undergo change with time and are important information for vaccine production. They are also an important virulence factor which may differ between serotypes, clones and, even within clones. Animal challenge studies clearly distinguish the invasive potential of certain serotype and clones such as 19F and 6B which are also reflected in increased TNF production.

Pneumococci express pilus like structures which are important for adhesion to lung epithelial cells. They are also more frequently found in clones associated with carriage and antibiotic resistance. Most recently, Neutrophil Extracellular Traps (NETs) are expressed in pneumococcal pneumonia and are cytokine and bacterial load dependent. Bacteria are trapped by NETs. The capsule is protective against trapping while endonuclease production disengages the trapped organisms.

Haemophilus influenzae has long been linked to LRTI. Derek Crook discussed the origins and evolution of antibiotic resistance in this organism from a biological and genetic perspective. Beta-lactamase production by H. influenzae was first reported in 1972, climbed rapidly but has stabilized among clinical isolates to rates of 15-25% in most countries. The recognition of the evolution of ICE, a family of some 50-60 kB plasmid elements in Haemophilus spp has been invaluable in studying the genetic organization and evolution of resistant strains. Furthermore, the population structure of ICEs can now be studied by comparative genomics and sequence diversity.

The impact of antibiotic exposure on the distribution of ICEs also differs from a non-exposed control group. ICEs appear to have an evolutionary origin acting as a vector for recently acquired resistance genes which distribute at high frequency independent of antibiotic pressure. They can transfer readily between commensal and pathogenic species and are reflected in the global spread of conjugated elements.

Paolo Tarsia contrasted the features of Legionella, Mycoplasma and Chlamydia spp. Infection with Legionella reflects the interaction between multiple environmental sources and a chain between water and aerosol exposure interacting with a host rendered more vulnerable by advancing age, tobacco use and the many causes of immunosuppression. In contrast, Mycoplasma have never been found as free living organisms. They survive through a parasitic life-style on host cells and in man are responsible for epidemic respiratory disease. In persons 5-20 years of-age, bronchitis and pneumonia predominate while in those less than 3 years, infection is primarily upper respiratory in nature.

The life-cycle of Chlamydia includes metabolically inert elementary bodies and metabolically active replicating reticulate bodies. The survival mechanisms for these intracellular pathogens therefore demand a specific therapeutic approach.

C. pneumoniae may cross multiple biological barriers and the vasculature and central nervous system to induce inflammation. The ability of this organism to survive in different immune cells is currently a fertile source of research. The role of C. pneumoniae in COPD and acute exacerbations of chronic bronchitis has been frequently reported. PCR testing has permitted assessment of the response to azithromycin in those with COPD and demonstrates regrowth after an initial decline. More recently, there is a clear link between C. pneumoniae and asthma. In a mouse model of pneumonia there follows a sustained airway hyperresponsiveness. The implications for management include better standardization of diagnostics, the use of antibiotics that are aimed at bacterial eradication and perhaps the use of those with anti-inflammatory affects, such as the macrolides.

A timely review by Elisabeth Nagy addressed the continuing importance of anaerobic bacteria in respiratory infections. Their place in lung abscess is clearly well established linked to aspiration brought about by the many causes of altered consciousness or dysphagia. Anaerobes can also be detected in nosocomial pneumonia often mixed with aerobic pathogens. Prevotella, Bacteroides and Fusobacterium spp are the predominant Gram-negative anaerobic isolates, often found with Gram-positive anaerobes such as peptostreptococci and microaerophilic streptococci. The importance of specimen collection and speedy and appropriate laboratory processing is the key to successful isolation rates. The range of antibiotics effective in anaerobic lung disease includes beta-lactam/beta-lactamase inhibitor combinations, as well as agents such as clindamycin and metronidazole.

The final talk in this workshop by Mark Bonten...
provided a microbiological profile of *Staphylococcus aureus* as an emerging respiratory pathogen. The emergence of PVL-positive *S. aureus* as a cause of necrotizing pneumonia in the community underscores the virulence of these new strains. They are characterized by SCCmec cassette of which four types are recognized to date.

Hospital-acquired MRSA bacteremia, including pneumonia, is often related to length of stay. Delays in diagnosis and inappropriate initial therapy often lead to an increased attributable mortality from MRSA compared to MSSA. This applies particularly to MRSA ventilator-associated pneumonia.

**Workshop 2: The epidemiology and economic impact of common respiratory infections**

Firstly, *The application of mathematical modelling in profiling community LRTI* by Derek J. Smith focused on influenza, with the aim of trying to predict the evolution of an influenza epidemic using ‘antigenic cartography’, a promising method applicable to other pathogens.

Next, *The impact of environmental pollutants on lung infections* by Giovanni Viegi reviewed the epidemiology and burden of pneumonia and tuberculosis, and the role of outdoor air pollutants (mainly fine particles and ozone) as risk factors for mortality and hospital admissions by LRTI. Indoor air pollution (mainly environmental tobacco smoke and biomass fuel exposure) is a risk factor for mortality and morbidity by LRTI and tuberculosis.

*Acute bronchitis: impact on antibiotic use and misuse* discussed by Theo Verheij described the ‘cough pyramid’ (high incidence in the general population and a low hospital burden). In addition, the huge variation in prescribing antibiotics among the different European countries is to be addressed by GRACE and the CHAMP EU funded projects which should provide useful data for determining under- or over-prescribing of antibiotics.

The topic *Chronic bronchitis from the stable phase to exacerbation: cost of failure and management* was reviewed by Marc Miravitlles and focused on the importance of COPD in terms of prevalence and costs to society. In relation to chronic disease, the problem is not over-prescription, but rather the late recognition (e.g. scarce use of spirometry as a diagnostic tool) and under-prescription. He believes there is enough evidence to justify the prescribing of antibiotics in elderly patients with exacerbation in order to prevent pneumonia.

Alberto Papi discussed the interrelationship between infections and asthma. The ‘Hygiene hypothesis’ that links frequent early life viral infections with a lower asthma frequency is now thought to be due to a reduced TH1 immune response predisposing to more severe infection and is not due to the viral infections themselves. Patients with asthma have not only an increased risk of viral infection, but also an increased severity of infection and an increase in virus production and persistence. The role of atypical organisms (principally *Mycoplasma* but also *Chlamyphila pneumoniae*) in asthma remains unclear.

Marleen Bakker emphasized that most children with cystic fibrosis now survive childhood and spend two thirds of their lives as adults. Issues important to adults, such as education, work and childbearing, are becoming increasingly important in cystic fibrosis management. Infection with *Pseudomonas aeruginosa* has a key influence on survival. Treatment options include eradication at initial colonization, suppression by inhaled antibiotic therapy and inflammation suppression with azithromycin.

The impact of vaccination on *Streptococcus pneumoniae* infection was discussed by Ake Ortvqvist. He emphasized that natural variations in serotype frequency were present before vaccination began. The overall effect of the 7-valent conjugate vaccine has been a reduction in invasive pneumococcal disease in vaccinated children and also in adults. Vaccine serotypes have reduced in frequency and are being replaced by previously uncommon serotypes, notably 19A. In the future, 10- and 13-valent vaccines may be helpful or, alternatively, a policy of changing the serotypes covered by vaccines every 5-10 years.

Mark Woodhead suggested that hospital admissions for community-acquired pneumonia (CAP) are the biggest cost driver for this disease and are greatest in the elderly. The ageing population and the increasing tendency to admit patients with CAP are driving costs up. In the future costs and burden might be contained by focusing on risk factors and the greater use of home management of low risk cases as directed by guidelines.

The material from the GRACE Workshops in Prague will be accessible in late December 2007 on the GRACE (www.grace-lrti.org) as well as the ESCMID (www.escmid.org) and the ERS websites (www.ersnet.org). You can find a rich resource of lecture material, such as webcasts, presentation slides and references that you are encouraged to access and disseminate to other colleagues and students.
Molecular Aspects of the Host-Pathogen Interaction during Bacterial Infection

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Project title
Studies on the interaction of the bd-type bacterial respiratory oxidases with nitric oxide by time-resolved spectroscopy: implications for novel molecular aspects of the host-pathogen interaction during bacterial infection.

The work has been performed by Vitaliy Borisov during his one-month visit from 27 September - 26 October 2007 at the CNR Institute of Molecular Biology and Pathology, University of Rome in Rome, Italy. The study focused on the interaction of the bd-type terminal respiratory oxidases, purified from the bacteria Escherichia coli and Azotobacter vinelandii, with nitric oxide (NO) by time-resolved spectroscopy.

Cytochrome bd is a bacterial respiratory quinol oxidase reducing oxygen to water, a chemical reaction coupled to generation of a membrane potential. It carries three hemes, b-558, b-595, and d, but, in contrast to heme-copper oxidases, contains no copper. Besides its role in energy conservation, cytochrome bd plays other crucial functions in bacterial physiology. The enzyme is preferentially expressed under low oxygen tension and other stress conditions. It has been suggested that cytochrome bd facilitates some pathogenic bacteria to infect O2-poor environments in the host. Mutations in cytochrome bd reduce virulence in pathogens.

Since NO is produced by human macrophages to kill microbes, it is useful to investigate how NO interacts with cytochrome bd.

Earlier we showed that NO inhibits the cytochrome bd turnover rapidly and potently, the inhibition being quickly and fully reverted upon NO depletion. We found that there is a rapid reaction of NO with the oxoferryl catalytic intermediate (Compound F) of cytochrome bd from A. vinelandii (kon = 1.2 × 10^5 M^-1 s^-1 at 20°C) leading to a nitrite-bound oxidized enzyme derivative.

In this work, we have studied in detail the reaction of NO with the fully oxidized cytochromes bd from E. coli and A. vinelandii using a stopped-flow method. We found that the fully oxidized (Compound O) cytochromes bd from both bacteria are capable of reacting with NO.

Although Compound O can react with NO, surprisingly, both the bimolecular rate constant and the end-product of this reaction are different from those for Compound F. The reaction of Compound O of the E. coli enzyme with NO is monophasic, proportional to [NO] and much slower than with Compound F (1.4-1.8 × 10^2 M^-1 s^-1 versus 1.2 × 10^5 M^-1 s^-1 at 20°C). The reaction of Compound O of the A. vinelandii enzyme with NO is monophasic at [NO] < 0.2 mM (after mixing) and 2-3 fold faster as compared to the E. coli enzyme. At high NO concentrations (> 1 mM), reaction of NO with the A. vinelandii enzyme in the O state also reveals a fast phase that cannot be clearly assigned at the moment.

Figure 1 compares the absolute absorption spectra of the end-products of the reactions of Compound O with NO, Compound O plus nitrite and one-electron reduced (MV) species plus NO. The spectrum of the reaction product of Compound O with NO showing a peak at approximately 639 nm is similar to the spectrum of MV-NO but clearly different from that of the nitrite-bound enzyme in the O state. Obviously, bound nitrite is not the end-product of the reaction of O with NO.

Our provisional interpretation of the results is that the reaction of Compound O with NO is a simple binding of NO to ferric heme d: (Fe_d^3+ + NO → Fe_d^3+ - NO).

This conclusion is supported by the fact that we do not observe transient reduction of the b-type...
heme groups in cytochrome bd in contrast to cytochrome c oxidase where, upon reaction of Compound O with NO, transient reduction of heme a has been detected. Whether the electron density is shifted from NO to the heme d iron $\text{Fe}_{d}^{3+} \rightarrow \text{NO} \rightarrow \text{Fe}_{d}^{2+} \rightarrow \text{NO}^{-}$ is not clear and requires additional studies.

Interaction of NO with cytochrome bd Compound O is much slower than that for cytochrome c oxidase $(1.4 \times 10^{2} \text{M}^{-1}\text{s}^{-1}$ versus $2 \times 10^{5} \text{M}^{-1}\text{s}^{-1}$ at 20°C). Moreover, for cytochrome bd, there seems to be a simple NO binding to ferric heme d, whereas in the case of cytochrome c oxidase, there is a real redox reaction that involves donation of a single electron from NO to the enzyme, most probably via a redox-active copper ion (CuB), leading to oxidation of NO into nitrite. In the latter case, redistribution of this electron between the redox cofactors according to their midpoint redox potentials is observed.

The present study allows us to conclude that in the terminal respiratory oxidases, CuB is necessary to catalyze the reaction of NO with Compound O, but it is not needed or even involved in the reaction of NO with Compound F, in contrast to previous suggestions.

These results are in agreement with the proposal that the expression of bd-type rather than heme-copper oxidases could enhance resistance to nitrosative stress thus promoting the virulence.

**Conference Report**

**7th Annual Meeting of the Italian Society of Virology**

In June 2007, the 7th National Congress of Italian Society of Virology was held in the beautiful historic city of Orvieto, Italy. Approximately 170 scientists attended the meeting with invited and selected lecturers covering the following topics: medical virology and antiviral therapy; viral biotechnologies and gene therapy; viral oncogenesis and vaccines; emerging and zoonotic viral infections; general virology and viral genetics; and virus host interactions and pathogenesis. A special emphasis was placed on human papillomavirus infection and prevention as well as development of guidelines for the preemptive (presymptomatic) therapy of human cytomegalovirus infections in transplant recipients. The final programme and the abstract book can be found on the website (www.siv-virologia.it or www.infectagentscancer.com).

In a special lecture dedicated to G.B. Rossi, F. Belardelli (Rome, Italy) revisited 50 years of interferon (IFN) research history. Belardelli reviewed the increasing knowledge regarding the type I (alpha and beta) and type II (gamma) IFNs and their multiple activities on cell growth, differentiation and immune response. He also pointed out how viruses have evolved several mechanisms to escape the direct effect of IFN and immune responses. In addition, several studies suggest an impairment of IFN production and/or response in cancer patients. The characterization of the molecular mechanism of IFN involvement in immune evasion could provide new concepts for immunotherapy protocols. IFNs are important as a link to innate and adaptive immunity and act as a powerful vaccine adjuvant on dendritic cells. Detailed knowledge on the IFN system in patients with cancer and hepatitis C (HCV) -infection would be instrumental in selecting categories of patients responding to IFN therapy.

H. Wolf (Regensburg, Germany) described new strategies in vaccine development based on the HIV experience. Research networks in the European Community have been created to develop vaccine strategies starting from molecular epidemiology and leading to the evaluation of vaccine candidates in primates and humans. He focused on the EUROVAC-cluster and INCO-programme showing how different antigen presentation systems were developed, particularly those based on DNA-plasmids and vaccinia-virus vectors. Preliminary results suggest that a combination of DNA prime and vaccinia-vector boost gives best results. Further studies are needed to optimize the vaccine protocols.

M. Puoti (Brescia, Italy) highlighted different antiviral strategies, describing their mechanisms of action and the clinical efficacy. In particular, he focused on hepatitis B virus (HBV), HCV and HIV infection therapy, discussing what should be taken into account for choosing the most effective therapeutic regimen. He stressed that the development of new drugs is mainly possible through the knowledge of the viral replication cycle, which enables identification of potential targets for therapies.

At this meeting, SIV formed an expert panel to review the existing data on HPV vaccines and develop recommendations specifically on the prevention of cervical cancer and precancerous lesions. K. Soldan (London, UK) overviewed HPV biology and pathogenesis underling some aspects related to the potential impact of vaccines. L. Banks (Trieste, Italy) described the molecular characterization of the interaction of HPV E6 with the Discs Large Tumor Suppressor and the difference between low- or high-risk HPVs. R. Kimbauer (Vienna, Austria) discussed HPV vaccine development, based on the virus-like particles (VLP) containing the L1 major
capsid protein, and progress toward a 'pan-HPV' vaccine containing the minor L2 capsid protein that displays cross-neutralizing epitopes. F. Scaglione (Milan, Italy) and H. Deckx (Belgium) described the formulation of and the studies on two prophylactic vaccines, Gardasil and Cervarix, respectively, capable of protecting humans against both persistent HPV infection and cervical intraepithelial neoplasia. A. Venuti (Rome, Italy) called for the development of new HPV therapies, through a new generation of drugs and vaccines, such as DNA and plant-derived vaccines.

G. Gerna (Pavia, Italy) presented clinical trials designed to develop guidelines for the management of HCMV infection in transplant recipients and in pregnancy. Based on these studies and other literature reports, he proposed using DNAemia instead of antigenemia as a parameter for starting the preemptive therapies in both solid and hematopoietic transplants. In this regard, different cutoff values should be adopted. Additionally, he presented preliminary data about the possibility of valuating a combination of virological and immunological information for the more effective monitoring of HCMV infection.

A. Carducci (Pisa, Italy) discussed the virological monitoring of environmental matrices and food and their importance for the risk assessment. She underlined the difficulties in the detection of virus in environmental samples because their highly variable composition often complicates detection. In addition, viruses appear to be extremely dilute and concomitant human and animal contamination is frequently encountered. F. Mutinelli (Padua, Italy) discussed lyssaviruses, which are carried by the European bat and related to classical rabies virus, as emerging zoonosis and highlighted the importance of surveillance. Human exposure through bites should be blocked immediately with rabies post-exposure treatment. Commercial rabies vaccines induce antibodies that should cross-neutralize and cross-protect against at least some of the lyssavirus genotypes. Indeed, bat handlers should be vaccinated to reduce the risk of infection.

In addition to the plenary lectures, 50 posters and 34 selected oral presentations were presented. During the congress three young scientists were given awards for the best posters; ten travel grants for the 3rd European Congress of Virology in Nürnberg, Germany were sponsored by consum.it (MPS Group). The next SIV meeting is scheduled to take place again in Orvieto, Italy, in autumn 2008, and the preliminary programme will be published on the SIV website.
Exposure: A Guide to Sources of Infection

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At first glance the unusual dimensions of this textbook are already apparent. The book not only includes 910 large-size pages but also 8430 references and an index with more than 6500 entries. Its structure and content confirm that this is the creation of a professional lateral thinker. Dieter A. Stürchler, Professor of Epidemiology at the University of Basel, had previously succeeded with an unconventional approach to infection medicine, in which he grouped agents according to their geographical distribution. Similarly, his new book has the makings of becoming a reference title for the next decades.

Rather than using the conventional approach, i.e. dealing with infectious diseases according to the taxonomy of their agents or ordering them according to clinical syndromes, the author addresses the issue with a novel method. He uses exposure as the starting point to systematically review infectious agents and the diseases they cause, irrespective of where they occur, and whether they are common or rare.

He starts by dividing types of exposure into broad categories: animal, environment, food, human, travel and transport, and nosocomial. These categories are further subdivided and split, and presented as a tree-like structure. For example, environment is categorized into natural environments and human-made environments; the latter into dams and irrigation, buildings, sanitation and waste water, cities, utensils and belongings etc.

In each subdivision microorganisms are dealt with according to their modes of spread (droplet-airborne, faeces-food, zoonotical, environmental, skin-blood). The author is particularly sensitive to the international nature of infectious diseases and has diligently researched unusual cases and outbreaks that have occurred throughout the world. He describes the impact of virtually all infectious agents currently known by detailing where the microorganism is found, its prevalence, its virulence and the clinical picture. The information given is based on the best evidence available (according to the analysis of an astounding number of references: 13’000). A listing of microbes is provided in the last section. The book closes with recommendations for taking an exposure history and a suggested check list for a diagnostic work-up, and it contains innumerable helpful tables.

How can a book with such an encyclopaedic claim be best validated? I decided to check using a rather rare disease entity, cutaneous larva migrans, which has a unique type of exposure and which occurs only under very restricted conditions. There are four relevant entries for this parasitic skin disease entity in the appendix. The first entry refers the reader to the section on exposure through humans, and there he is guided to the subsection on environment, where he finds data on the geographical distribution of cutaneous larva migrans, their prevalence and vulnerable population groups. Another citation brings the reader to the section on leisure and lifestyle, where he learns about soil-to-skin transmission of animal hookworm larvae. A third reference leads again to the environment, where information is presented on the risk of acquiring the disease at tropical beaches under the heading ‘travel-related exposure’. Finally, a short but precise clinical description is provided. The fact that exposure through contaminated textiles is not mentioned can be explained by the fact that this insight is very new and this type of transmission occurs only in resource-poor communities in the developing world.

In summary, the book is not intended to be read from the beginning to the end, but is an extremely useful manual for clinical microbiologists and infectious disease specialists all over the world. I suggest that a copy of the book be made available in the library of all infection medicine and travel medicine units. Physicians who are confronted with unusual cases of infectious diseases should keep the book at a favourite place on their shelf.
Physician’s Guide to Arthropods of Medical Importance, 5th Edition

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Is the bug an insect or an arachnid? Are lice and mites closely related ectoparasites? Why is Blatella germanica called the ‘German cockroach’, although this insect is rarely seen in Germany? Typical queries, but when it comes to answering questions related to medical entomology few experts are at hand.

Despite the fact that arthropod-borne diseases pose considerable threats to human health and that many of the infectious agents carried by insect vectors are re-emerging and will become even more important during the next decades of global climate change, the details of medical entomology remain elusive to the majority of medical microbiologists and infectious diseases specialists. With the globalization of commerce, the frequency of intercontinental travel and military activity in the most remote parts of the world, increasing contact with arthropod species otherwise not commonly encountered in Europe is expected to occur. Therefore, raising awareness, broadening and improving knowledge, and improving competency within the healthcare workforce will contribute to the early diagnosis and effective management of arthropod-borne diseases.

Jerome Goddard, a medical entomologist at the Bureau of Environmental Health of the Mississippi Department of Health, USA, intends to meet these challenges with his fifth edition of the ‘Physician’s Guide to Arthropods of Medical Importance’ which will be especially helpful to medical microbiologists who find themselves in unknown territory, both geographically and medically.

The book provides physicians and others with reference data concerning all arthropod types of medical importance, e.g. ants, bees, beetles, bugs, caterpillars, centipedes, cockroaches, earwigs, fleas, lice, millipedes, mites, mosquitoes, moths, pentastomes, scorpions, spiders, ticks, wasps and flies (those that bite and those that carry infectious agents passively).

The volume is divided into four parts. Part One addresses the pathological conditions caused by arthropods and the rationale behind various treatment regimes. The seven chapters not only show the differences between stings and bites (not at all obvious) and describe various allergic manifestations, but also address the delusion of parasitosis - imaginary insect infestations (more common than one would believe). Part Two contains chapters on the identification of arthropods and on signs and symptoms of arthropod-borne diseases. In Part Three, detailed information concerning each of the several hundred arthropods of medical importance is given. The book closes with a section on personal protection measures and the pros and cons of insect repellents. A useful addition to this edition is the ‘Bug Coach’, a CD-ROM, which provides over 100 drawings, figures and photos (although I have found it difficult to use the interactive links).

The author of the new edition of the Physician’s Guide to Arthropods of Medical Importance, which is an authoritative coverage of the complex and fast-moving discipline of medical entomology and will serve as a reliable reference for health-care providers for the years to come, is highly commended for presenting a comprehensive text on medical entomology. Both his vast experience and dedication are evident.

Jerome Goddard
CRC Press / Taylor Francis, Boca Raton, Florida, USA, 2007
ISBN: 0849385393
Pages: 480; Price: USD 159.95
ESCMID Events

2 – 5 March 2008
47th ESCMID Postgraduate Technical Workshop
Gene Expression during Infection
Siena, Italy

26 March 2008
ESCMID Postgraduate Education Course
Improving Antimicrobial Prescribing
Almaty, Kazakhstan

14 – 15 March 2008
48th ESCMID Postgraduate Education Course
Infections with Multiresistant Pathogens
Berlin, Germany

17 – 19 April 2008
ESCMID Postgraduate Education Course
Measuring, Auditing and Improving Antimicrobial Use
Barcelona, Spain

18 – 19 April 2008
4th GRACE Postgraduate Course
Barcelona, Spain

19 – 22 April 2008
18th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID)
Barcelona, Spain

23 April 2008
ESCMID Symposium
1st European Day of Fighting Infection
Barcelona, Spain

29 – 31 May 2008
ESCMID Conference
Treatment of Infections Caused by MDR Gram-positive Bacteria
Venice, Italy

9 – 10 June 2008
ASM / ESCMID Workshop
Antimicrobial Resistance among Bacterial Pathogens: Mechanism, Detection and Molecular Epidemiology
Mexico City, Mexico

27 – 28 June 2008
ESCMID Conference
Viral Haemorrhagic Fevers
Istanbul, Turkey

19 – 25 July 2008
7th ESCMID Summer School
Regensburg, Germany

18 – 20 September 2008
3rd GRACE Workshop
The Science, Practice and Challenges of Lower Respiratory Tract Infections in Primary Care
Cambridge, UK

4 October 2008
5th GRACE Postgraduate Course
Antibiotics or not: from Acute Bronchitis to Acute Exacerbation of Chronic Bronchitis
Berlin, Germany

5 – 8 October 2008
ESCMID / FEMS Conference on New Frontiers in Microbiology and Infection: Clostridia: From Old Diseases to New Threats – Basic Science Meets Infectious Diseases
Villars-sur-Ohillon, Switzerland

9 – 11 October 2008
ESCMID Professional Affairs Workshop
Rome, Italy

5 – 7 November 2008
ESCMID Postgraduate Education Course
Invasive Fungal Diseases: Epidemiology, Diagnosis, Therapy and Antifungal Susceptibility Testing
Nijmegen, The Netherlands

16 – 19 May 2009
19th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID)
Helsinki, Finland

Endorsed by ESCMID

14 - 17 May 2008
8th International Meeting on Microbial Epidemiological Markers
Zakopane, Poland
Contact: Bozena Matynia
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www.immem-8.org
Front Page: In 2008, clinical microbiologists in Europe may reach their goal of forming a new Section of Clinical Microbiology within the European Union of Medical Specialists (UEMS). This has been a lengthy process for all those involved, but the process is expected to come to a close in spring 2008. For more information, please see the article by John Degener in this issue of the newsletter.

Below: Group photo of the faculty and students at the end of the ESCMID Summer School 2007 in Suceava, Romania. This School was the largest ever with a record number of 53 participants.