EUROPEAN CONFERENCE REPORT

Report of the Consensus Conference on Antibiotic Resistance; Prevention and Control (ARPAC)

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ABSTRACT

Antimicrobial resistance is a key public health concern in Europe. It is known that there are significant variations in the prevalence of resistance across Europe, and methods to reduce the problem are also assumed to vary significantly. The 'Antibiotic Resistance; Prevention and Control (ARPAC)' Concerted Action project was funded by the European Commission and conducted by four study groups of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID). The project established a network of European hospitals and collated data on antimicrobial resistance prevalence, antimicrobial susceptibility testing methods, typing methods employed, antimicrobial use, antibiotic policies and practices, and infection control policies and practices. The ARPAC Consensus Conference, entitled 'Control of antibiotic resistance in European hospitals—informing future evidence-based practice', was held in Amsterdam in November 2004. The conference was co-hosted by the European Commission, ESCMID and the Dutch Working Party on Antibiotic Policy (SWAB). Key ARPAC findings were presented and discussed in the context of the worldwide situation. The conference delivered a set of high-priority recommendations likely to have a significant impact on antimicrobial resistance. This report summarises these recommendations.

Keywords Antibiotic resistance, ARPAC, European hospitals, infection control, recommendations, review

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CONFERENCE FACULTY

Plenary lectures

Chairpersons: H. Verbrugh (Rotterdam, The Netherlands), J. Vila (Barcelona, Spain).
Presenters: J. Bruce (Aberdeen, UK), H. Goossens (Antwerp, Belgium), F. M. MacKenzie (Aberdeen, UK), I. M. Gould (Aberdeen, UK), M. J. Struelens (Brussels, Belgium), K. J. Towner (Nottingham, UK), J. van der Meer (Nijmegen, The Netherlands).

Workshop 1

Rapporteur: G. Duckworth (London, UK).
Presenters: R. Canton (Madrid, Spain), H. Goossens (Antwerp, Belgium), H. Grundmann (Bilthoven, The Netherlands), V. Jarlier (Paris, France), G. Cornaglia (Verona, Italy).

Workshop 2

Chairperson: J. van der Meer (Nijmegen, The Netherlands).
Rapporteur: B. Cookson (London, UK).
Presenters: D. Nathwani (Dundee, UK), I. M. Gould (Aberdeen, UK), B. Cookson (London,

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[†]ARPAC Consensus Conference Participants are listed in an appendix, available online; please see the section headed supplementary material.

UK), H. Kolmos (Odense, Denmark), I. Gyssens (Rotterdam, The Netherlands), J. van der Meer (Nijmegen, The Netherlands).

Workshop 3

Chairperson: V. Krcmery (Bratislava, Slovak Republic).
Rapporteur: D. Monnet (Copenhagen, Denmark).
Presenters: F. M. MacKenzie (Aberdeen, UK), R. Polk (Virginia, USA), C. Brandt (Copenhagen, Denmark), D. Monnet (Copenhagen, Denmark), V. Krcmery (Bratislava, Slovak Republic), G. Zanetti (Lausanne, Switzerland), I. M. Gould (Aberdeen, UK).

Workshop 4

Chairpersons: P. J. van den Broek (Leiden, The Netherlands), J. Vila (Barcelona, Spain).
Rapporteur: M. J. Struelens (Brussels, Belgium).
Presenters: A. Voss (Nijmegen, The Netherlands), C. Suetens (Brussels, Belgium), M. Struelens (Brussels, Belgium), S. Harbarth (Geneva, Switzerland), K. J. Towner (Nottingham, UK), L. Dijkshoorn (Leiden, The Netherlands), J. Green (London, UK), K. Levi (Nottingham, UK).

INTRODUCTION

Antimicrobial resistance is causing major concern worldwide. There is a fear that a return is being made to the situation 50 years ago, when there were few, if any, effective antibiotics, with the result that numerous infections serious enough to necessitate hospital admission were usually fatal. Many of the major resistance problems currently causing concern emanate from the hospital environment. It is difficult at the start of the 21st century to grasp what life must have been like before antibiotics were widely available. For example, staphylococcal septicaemia had a mortality rate of 80% [1], and infective endocarditis and meningitis had mortality rates approaching 100% [2].

The antibiotic era transformed the treatment and outcome of infectious diseases, but there is no doubt that the pendulum has now swung the other way, and intensive antibiotic use (often overuse) in hospitals has generated more resistance problems than could ever have been imagined. These problems are compounded by the ever-increasing immunosuppression that comes with modern diagnostic and therapeutic modalities, and are magnified further by the opportunities for cross-infection that exist in modern, busy, often over-crowded, under-staffed hospitals.

It is in this setting that four study groups of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) sought to investigate what measures are being attempted to control antimicrobial resistance at a pan-European level. It was already well-known that methicillin-resistant *Staphylococcus aureus* (MRSA) is a major scourge of many European hospitals (http://www.earss.rivm.nl), but there was less information regarding the problems with other major antimicrobial-resistant pathogens. There had been no previous attempt to quantify these problems in the context of parallel infection control and antibiotic policy measures in European hospitals. Furthermore, there had been no previous efforts to relate the resistance problem at a hospital level to actual antibiotic use, which is responsible for the Darwinian evolution that selects so many antimicrobial-resistant bacteria.

Against this background, the 'ARPAC' project was conceived. This initiative was a Concerted Action project funded by the European Commission's Research Directorate General within the Fifth Framework Programme (project number QLK2-CT-2001-00915). The full title of the project was 'Development of Strategies for Control and Prevention of Antibiotic Resistance in European Hospitals'; the short title was 'Antibiotic Resistance; Prevention and Control (ARPAC)'. Hereafter, the project will be referred to as ARPAC.

The ARPAC project ran from 1 January 2002 to 30 June 2005, with the work being carried out under the auspices of four ESCMID study groups, namely the ESCMID Study Group on Antibiotic Policies (ESGAP), the ESCMID Study Group for Antimicrobial Resistance Surveillance (ESGARS), the ESCMID Study Group on Nosocomial Infections (ESGNI) and the ESCMID Study Group on Epidemiological Markers (ESGEM). The goals of the ARPAC project were to: (1) lay the foundations for a better understanding of the emergence and epidemiology of antibiotic resistance in human pathogens; and (2) evaluate and harmonise strategies for the prevention and control of antibiotic-resistant pathogens in European hospitals.