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HEALTHCARE-ASSOCIATED INFECTIONS

PAPER FOR THE EUROPEAN COMMISSION AND THE NATIONAL ACADEMIES OF MEDICAL SCIENCES ON THE SCIENTIFIC SESSION ON HEALTHCARE-ASSOCIATED INFECTIONS HELD AT THE FEAM CONFERENCE IN BRUSSELS ON 19 NOVEMBER 2005

The meeting heard the following contributions:

Chair: Professor Sir Peter Lachmann FRS FMedSci, Microbial Immunology Group, University of Cambridge, Centre for Veterinary Sciences, Cambridge, UK; President of FEAM.

Professor Barry D. Cookson, Laboratory of HealthCare Associated Infections, Health Protection Agency, London, UK.
Title: *Healthcare-associated infections: disease burden and determinants*

Professor François Bricaire, Service des Maladies Infectieuses et Tropicales, Hôpital Pitié-Salpétrière, Paris, France.
Title: *Healthcare-associated infections prevention strategies: best practice and obstacles*

Professor Marc J. Struelens, Department of Microbiology, Hopital Erasme and Infectious Diseases Epidemiology Unit, School of Public Health, Université Libre de Bruxelles, Belgium.
Title: *Current policies and priorities for control of healthcare-associated infections and antibiotic resistance in European hospitals*

Healthcare-associated infections (HAIs), also known as nosocomial infections, are defined as infections that develop in relation to patients' exposure to health care. HAIs are a global problem that is receiving growing media and political attention in an era of increasing public expectations from healthcare. It affects one in ten hospitalized patients and contributes to an approximately two-fold increase in risk of mortality as well as prolonged hospital care. It can develop either as (1) endogenous infection following invasive diagnostic or therapeutic procedures, such as surgery or intensive care or (2) exogenous infection caused by pathogens that spread from patient to patient on the hands of healthcare workers or, more rarely, through the contaminated hospital environment. HAI is increasingly difficult to treat due to the rise of antimicrobial resistance in etiologic agents. In the European Union, it is estimated that 3 million healthcare-associated infections occur each year, causing 50,000 deaths and costing 6.3 billion euros. Among all disease prevention interventions, hospital infection control programmes have been shown to be among the most cost-effective and cost-beneficial.

Preventing endogenous infection relies on compliance with good clinical practice during invasive care. Controlling cross-infection should combine (1) *standard precautions*, the mainstay of which is correct healthcare workers' use of gloves and decontamination of their hands between patient contacts and (2) *disease or organism–specific patient isolation precautions.* For standard precautions, alcohol-based hand antisepsis has replaced handwashing, provided hands are not soiled, as the standard of care. However, healthcare workers' poor compliance with hand hygiene is a major issue that requires multimodal education and promotion to be overcome. The Global Alliance for Patient Safety launched this year by WHO recommends all member states to adopt its Hand Hygiene Guideline at all levels of healthcare. Whereas highly transmissible pathogens (eg. *Mycobacterium tuberculosis* or methicillin-resistant *Staphylococcus aureus* [MRSA]) require additional isolation precautions, other multi-resistant microorganisms display variable ability to spread, depending on the strain and hospital concerned. This specificity of "hospital ecosystems" requires sophisticated surveillance and microbiology support to guide local isolation policy and outbreak control interventions.

The diversity of healthcare systems of European countries including the organization, professional training and practices, is reflected in the various approaches to the prevention of HAI and in the management of antibiotic resistance. Recent surveys have indicated that a large proportion of hospitals lack the necessary resources in trained, infection control personnel, nursing personnel, isolation room capacity and modern hand hygiene. Do these differences in prevention strategies result in significant difference in terms of risk? Data from international surveillance studies show consistent differences between countries in the prevalence of HAI and antibiotic resistant strains such as MRSA. Although these differences are confounded by variation in hospital patient populations, care practices and surveillance intensity, recent data suggest that promotion of alcohol-based hand hygiene and access to sufficient isolation capacity are associated with lower prevalence of MRSA infection in European hospitals.

Cost-effective methods for surveillance of HAI and antibiotic resistance have been developed and harmonized across Europe by HELICS, the DG SANCO funded European network for the surveillance of nosocomial infections. Local surveillance should focus on evaluation of methods of preventing infections. Multicentre surveillance programs provide estimates of the disease burden and trends in HAI, which can assist with the prioritization at the national level. Whether these standardized databases are appropriate for benchmarking or outcome-based quality assessment of hospital care delivery is closely examined by healthcare authorities; and public notification of surveillance data has become mandatory in several EU Member States.

There is now an urgent need to take appropriate action to improve patient safety by reducing the burden of HAIs and containing the spread of antimicrobial resistance in healthcare settings.

A variety of actions to reduce this major public health problem are recommended:

1. To recognize that HAIs in Europe are unacceptably compromising patient safety; are aggravated by increasing antibiotic resistance; and represent a major public health problem with serious consequences for the affected patient and indeed for the whole of society.
2. To combat antimicrobial resistance and antibiotic misuse, the EU issued a Council Recommendation in 2001 to promote the prudent use of antimicrobial agents in human medicine through national, inter-sectoral action plans. Prevention of HAIs should complement these actions. The Commission is therefore invited to propose an EU Council Recommendation inviting Member States' governments to establish common goals and approaches in developing national strategies and implementing action plans towards improved patient safety and reduction of the incidence of HAI, in accordance with the strategy set by WHO in the World Alliance for Patient Safety.
3. National Health Authorities should ensure that hospitals and other healthcare facilities have access to appropriate human resources and organizational mandate to operate HAI prevention and control programmes. These include proper organization and management of healthcare delivery as advised by local infection control and quality of care committees, as well as surveillance of HAI, education of healthcare staff and infection control interventions conducted by an infection control team composed of physicians and nurses with specialized training in the field. It also importantly requires provision of sufficient nursing staff to implement proper patient isolation.
4. National health authorities should ensure that hospitals and other healthcare facilities have access to appropriate structural resources to operate HAI prevention and control programmes. These include a sufficient number of single patient rooms adequately equipped for patient isolation, hand hygiene facilities available at the point of care and access to microbiology laboratory services, including microbial genotyping, as well as information technology tools for data mining from healthcare information systems.
5. National health authorities should ensure that national HAI and antibiotic resistance surveillance systems are developed and sustained. These systems should include structural, process and outcome indicators relevant to quality assessment of medical practice. The national surveillance systems should use, wherever possible, internationally recognized definitions, methods and procedures to ensure risk-adjusted infection rates appropriate for national and international comparison.
6. National health authorities should consider adopting anti-infection measures that had been routine in hospitals before the introduction of antibiotics after the Second World War: restriction of visiting, especially by children; keeping bare walls that can be washed down with iodoform; and allowing into the hospital environment only those whose presence is necessary.
7. Building upon progress achieved in harmonization of surveillance and control strategies by DG SANCO supported projects including HELICS and IPSE, the European Centre for Disease Prevention and Control (ECDC) should further contribute to improved coordination and harmonization of HAI surveillance, professional training and guidance on best infection control practice in Europe, in collaboration with national health authorities and learned societies.

8. Patient safety and infection prevention should be included in the standard training of all health professionals, starting from undergraduate education, and in continuing professional development and lifelong learning schemes.
9. A core curriculum for specialty training of physicians and nurses in healthcare epidemiology and infection control should be established at Community level using the best expertise in the Member States. These training programmes and certification of competence should be organized at national level.
10. Infectious diseases and infection control should be recognized medical specialties in all EU Member States. Only in a few Member States does the medical curriculum include such specialties. The expertise of these medical specialists should be used more effectively throughout Europe. They should be involved in the management of infection in hospitals including treatment and prevention.
11. Rapid microbiological diagnostic technology including point of care testing should be developed to inform cost-effective interventions including targeted treatment modalities and infection control prevention and control measures.
12. Cooperation should be established between healthcare professionals and patients and relatives to foster a culture of awareness of adverse events and prevention strategies. The general public should also be better informed about the risks and potential threats of antibiotic resistance.
13. HAI prevention and control is a multi-faceted problem requiring multi-disciplinary solutions. Resources need to be made available for research to improve the understanding of the epidemiology of HAI, its interplay with antibiotic resistance and for the evaluation of cost-effective intervention strategies, including those based on novel diagnostic, prevention and control technologies and practices.
14. The EU should encourage the pharmaceutical industry to invest further in R&D to discover new “drug targets” and antimicrobial drugs.

Brussels, 25 January 2006