The symposium was introduced by Professor F. Daeschner (Universitäts-Klinik, Freiburg) who invited the assembled international experts to say how they thought hospital cross-infection laboratories should function, with or without national reference laboratories, and what the proven standards in hospital infection control should be.

Clinical Aspects

Prof. G. G. Jackson (Abraham Lincoln School of Medicine, Chicago) said clinical aspects were the entire basis of the problem, because hospital infection produces disease, prolongs hospitalisation, increases fatalities and adds to the cost of medical care. Professor T. Eickhoff (Colorado Medical Center, Denver) described prevalence studies of nosocomial infection which showed increase in the length of stay in affected patients and the beneficial effects of active control measures and education, supervised by a nurse-epidemiologist. Mrs. J. Garner (Center for Disease Control, Atlanta) described the role of the nurse-epidemiologist and his or her need for almost charismatic personal attributes.

Professor L. O. Kallings (National Bacteriological Laboratory, Stockholm) then presented bacterial prevalence data from 250 patients and from the environment in an intensive care unit in Sweden, which enabled colonisation, infection and the transfer of microorganisms to be mapped. Maximal precautions against nosocomial infection were in force at the beginning of the study and were systematically reduced to see if the infection rate or bacterial distribution changed. Whilst the use of surface disinfectants could be reduced, and nose masks and shoe covers abandoned with no effect on contamination or infection records, isolation and barrier nursing of patients colonised or infected with *Staphylococcus aureus* was crucial in preventing spread to other patients. Most infections were however endogenous.

Professor R. Skalova (National Reference Laboratory, Zagreb) gave an account of an outbreak in newborn babies of severe and sometimes fatal infections including meningitis with a particularly virulent strain of *Pseudomonas aeruginosa* which had colonised some 90% of the patients in the nursery. Dr. G. Ayliffe (Summerfield Hospital, Birmingham) described the prevalence of staphylococci in patients and various hospital environments including operating theatres, and Professor H. Reber (Kantonspital, Basel) described that of *Pseudomonas aeruginosa*. Professor B. Nyström (Karolinska Sjukhuset, Stockholm) showed the main infection risk for hospital staff in Sweden to be hepatitis B, the incidence of which had increased in comparison to the general population in the 1960's but has fallen since, even in relation to a sudden rise in hepatitis in the general population in 1976. This suggests that present control measures such as the early identification of carriers among patients, their segregation within dialysis units, the use of heat-disinfectable or disposable dialysis machinery, the screening of all blood donors, the extensive use of gloves by staff handling high-risk patients, and a visible warming on all specimens collected from sick patients are effective. Specific immunoglobulin appears to play only a minor role in staff protection.

Bacteriological Aspects

Dr. M. T. Parker (Cross-Infection Reference Laboratory, Colindale, England) outlined the necessary laboratory activities for the control of hospital infection. Professor E. Kanz (Universitäts-Krankenhaus Eppendorf, Hamburg) showed how systemic bacteriological investigations in the operating theatre detected routes of infection and enabled control measures to be enforced which reduced the potential infection risk from outside sources. Impression agar cultures demonstrating the contamination of surfaces have been useful educationally, but selective surveillance is better than routine environmental monitoring.

Disinfection and Sterilisation

Dr. M. Rotter (Hygieneinstitut, Vienna) surveyed critically the use and effectiveness of disinfectants and sterilisation in hospital. The practicability of regular, effective hand-washing, between each patient, particularly by nurses, was disputed and disposable gloves offered as an alternative.

Antibiotics and Antibiotic Policies

Antibiotic use, particularly prophylactically, was reviewed critically by Dr. D. Adam (Children's Hospital, Munich) who considered situations where chemoprophylaxis is highly effective, of no value, and positively detrimental. He quoted controlled studies showing the value of certain antibiotics in surgery when used perioperatively in very short courses, and supported these with pharmakokinetic results. In open heart surgery, for example, concentrations up to 50 μg/ml of cephradine were found in pericardial fluid after a dose of 2 g and Regamey et al., found similar concentrations with cephalothine. After an average of 60 min myocardial concentrations of cephalothine of up to 20 μg/g (mean 10 μg/g) were found by *Adam* after a single dose of 100 mg/kg, which contrasted with corresponding cephalothin concentrations of 3 μg/g or less for the same time after the same i. v. dose. Professor H. A. Hirsch (Universitäts-Frauenklinik, Tübingen) showed that a brief perioperative prophylaxis with cephalothine significantly reduced the incidence of post-operative fever and urinary tract infection after vaginal hysterectomy but had no effect on the frequency of vaginal vault infection. Clindamycin and ampicillin perioperatively at Caesarian section significantly reduced the incidence of post-operative fever, wound infection and endometritis but had no effect on leucocytosis or bacteriuria. Concern about disturbing the bacterial flora and masking infection in the baby nevertheless outweigh the advantages of prophylaxis for the mother.

Economic Aspects

Dr. R. Haley (Center for Disease Control, Atlanta) presented the annual cost of nosocomial infection and projected a cost-benefit analysis of control measures in which the savings in excess hospitalisation costs resulting from a reduction of 6.3% in nosocomial infection in hospitals in the USA would pay for the cost of a nationwide infection and surveillance programme employing one infection control nurse for every 250 hospital beds. A reduction of 20% in the nosocomial infection rate was projected to save US $155,266,000 and of 50%, US $495,926,000, annually. He then presented interim results from the C.D.C. Study of the Efficacy of Nosocomial Infection Control (SENIC).

Dr. A. H. Wehha (World Health Organization, Copenhagen) considered how direct and indirect costs of nosocomial infection and its prevention should be assessed, and Professor W. van Eimeren (University Institute of Medical Information, Statistics and Biomathematics, Munich) described proposals for a study in West Germany with the same aims as the SENIC project. Professor Nyström, Dr. Parker and Dr. Rotter reported on experience in Sweden, Britain and Austria, respectively.
Conclusions and Recommendations

Prof. Jackson and Dr. Parker summarised the workshop as follows: Nosocomial infections, at an overall incidence of 4–8%, are an endemic disease accounting for up to one tenth of all hospital bed-days. Urinary tract, wound and respiratory infections account for about three quarters of all nosocomial infections and perhaps a quarter to a third of such infections are preventable. Although a controlled clinical trial is the ideal assessment of the efficacy of a particular preventative measure, reasonable inference of effectiveness may sometimes have to be accepted.

An infection control team should include at least one, and possible several, prominent staff members, together with one or more professional hospital hygienists or nurse-epidemiologists with experience in patient care, ward procedures, administrative capability and personal charisma, as well as bacteriological laboratory facilities. Discrete communication with hospital staff and educational programmes is an essential function.

Hospital infections may be endogenous or exogenous. Although in the latter, airborne spread may be important in special circumstances such as open wounds or burns, the contact route is pre-eminent, particularly from the hands of staff. Since environmental sources of infection are mainly limited to objects brought into close proximity to the susceptible site, the general disinfection of hospital surfaces is of dubious value and wasteful. Adequate isolation facilities appropriate to the route of spread are very important, however, as are reliable disinfection and sterilisation procedures for medical equipment or pharmaceutical products. Manufacturers should make apparatus capable of being effectively sterilized or disinfected where necessary.

General environmental surveillance is laborious and of little value except when related to specific outbreaks or as a purely educational measure. Handwashing is the single most important measure in preventing contact infection; the nature of the agent used is probably less important than the dilution effect and detergency of the procedure. Where the frequency of washing is a limiting factor, disposable gloves should be worn.

Appropriate antibiotic chemotherapy and chemoprophylaxis such as a very brief perioperative course in clean-contaminated prophylactic uses of antimicrobials may never be proved in biotic prescription is extremely helpful in evaluating a hospital’s use of antibiotics and its influence on nosocomial infections. Such information can assist a hospital infection control committee in encouraging physicians to cooperate in necessary control measures. The economic aspects of hospital infection are important in view of the large cost of prevention and cost effectiveness studies. Yet not all aspects of such a programme, such as education, can be costed, although they are nevertheless an important part of the hospital hygienist’s work.

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P. J. Wilkinson, München

Edward H. Kass — Sixtieth Birthday

Our congratulations to Edward H. Kass on his sixtieth birthday in December 1977, which was celebrated in the Harvard Club.

As a brilliant representative of the outstanding group of specialists in Boston, whose work commands all our admiration, his name is known to infectious diseases men throughout the world—and perhaps, too, in outer space! Those of us who know him personally value his warmth, his friendship, his ever-ready helpfulness, and, not least, his modesty.

We wish him continuing creative powers in the achievement of his many ideas. His colleagues in a specialist area which is not yet officially recognised in many countries have good reason to be grateful to him, especially in his capacity of Editor-in-Chief of the Journal of Infectious Diseases, and, for us, as an active Member of the Overseas Editorial Board of INFECTION.

W. M.

Award of the International Society of Chemotherapy

The ISC Award is made for the purpose of stimulating fundamental and applied research in the field of chemotherapy. The Award is open to all scientists in the field of chemotherapy. The Award consists of an appropriate citation and US $ 1,000. In addition travelling expenses incidental to conferring the Award will be paid by ISC.

To be eligible for the Award, a nominee shall have accomplished outstanding and meritorious research in the field of chemotherapy. For the purpose of the Award, outstanding research is understood to be work of consistent and unusual merit during the career of an individual. At the time of the nomination the nominee must also be actively engaged in the area of research for which the Award is to be made.