

Nosocomial Waterborne Diseases

Experts focus on efficient prevention

However, before effective strategies can be developed and tested, some fundamental questions still need to be answered to improve the overall understanding of the modes of transmission. To this end, a number of speakers described how modern techniques, such as pulsed field gel electrophoresis and molecular typing, were helping to elucidate which infections were endogenous in origin, which came from water used for drinking and washing and which found their way from patients into water outlets only to be spread to other patients.

In the opening session, Prof. Martin Exner, from the University Hospital in Bonn, Germany, - who also chaired the morning session - reminded delegates that, although water was identified early on as a source of nosocomial infection, there were still very few consistent prevention and control strategies in place. As a result, sporadic cases and outbreaks of waterborne diseases continue to occur causing significant morbidity, mortality, and avoidable costs. An improved situation exists already for France, where fewer cases of hospital-acquired infections have been reported since the introduction of strict regulations for high risk areas which also demand the use of 0.2 µm point-of-use filters. In Germany, Prof. Exner believed that especially the implementation of the DRG (diagnostic related groups) system will sharpen hospitals' focus on efficient infection control measures, in order to avoid the extra expense associated with increased use of antibiotics and prolonged hospital stays.

Prof. Axel Kramer, from the University Hospital at Greifswald, Germany, pointed out that the formation of biofilm is the main cause for microbial contamination of water pipes and for of waterborne infections. He recommended that the biofilm formation must be avoided at the earliest time point when the hospital is being built. Once it is established it is almost impossible to eliminate respectively to control. As a positive example, he described a rapid decontaminating effect by aggressive and time consuming overnight treatment with highly concentrated chlorine dioxide in one hospital. However, Prof. Kramer pointed out that for the secure protection of immuno-compromised patients high

Experts from across Europe came together to review the current state of nosocomial waterborne diseases on 10 July 2004 at the Hammer-smith Hospital, London. Whilst MRSA is covered extensively in the media, waterborne diseases caused by Legionella spp., Pseudomonas aeruginosa, Cryptosporidium or Aspergillus go largely unreported. One of the key objectives of this workshop was to give an overview on these 'silent epidemics', which are a particular threat to the growing number of immuno-compromised patients, and to highlight promising strategies for their control.



**Prof. Martin Exner,
University Hospital Bonn**



**Prof. Axel Kramer,
University Hospital Greifswald**

risk areas in his hospital, e.g. intensive care units, neonatological units or transplant units are equipped with disposable Pall point of use filters.

Moving on to *Pseudomonas aeruginosa*, Prof. Matthias Trautmann (Stuttgart/Germany) reported that *Pseudomonas aeruginosa* is actually the second most causative agent for infections in intensive care units. Using molecular typing, Prof. Trautmann was able to show in a recent study that 39% of the infections were caused by strains isolated from water sources in the patients room or the adjacent room. The study additionally revealed that five patients transmitted their own strains also to other tap water outlets. In a retrospective investigation, Prof. Trautmann was able to show a dramatic reduction in nosocomial infections caused by *P. aeruginosa* on a surgical intensive care unit when disposable Pall point-of-use filters were fitted to all seven tap water outlets in this unit.

As a consequence a considerable reduction of antibiotic treatment has been documented and significant cost savings could be achieved for the hospital.

Dr. Tom Makin from the Royal Liverpool University Hospitals/UK put the problem of *Legionella* in perspective by revealing that, overall, 95% of cases went unreported because of the difficulty in recognising the symptoms. Although *Legionella* spp. is well recognised in hospitals, the causes of it still seem to baffle infection control teams. In many cases, systemic treatments may not achieve the control that is required and often the hot water supply can fall below the 60 °C needed to kill the organism. Conversely, cold water supplies could rise above the 20 °C level at which growth does not occur. Dr. Makin advised hospitals to be on the watch for the potential for proliferation; stasis; aerosolisation opportunities; and susceptible populations.

In the final morning session, Dr. Rachel Chalmers, Head of *Cryptosporidium* Reference Unit, NPHS, Swansea UK explained how even low numbers of these microorganisms could be deadly, especially among immuno-compromised patients such as HIV patients.

Kicking off the afternoon session, which was jointly chaired by Dr. Stephen Hart and David Harper, technical expert on water decontamination, Dr. Adila Warris (Nijmegen/Netherlands) reviewed new evidence implying that *Aspergillus* was not only an airborne pathogen. HEPA filtration alone would, therefore, not be a totally reliable control strategy and consideration needs to be given to protecting patients against waterborne strains. Also for *Aspergillus* infection chains from water sources in hospitals to patients have been demonstrated recently.

Amanda Stephens, Senior Technical Specialist, Scientific and Laboratory Services, Pall Medical, then presented the results of an independent evaluation of a new showerhead with integrated 0.2 µ filter membrane (Pall Aquasafe AQL3). When exchanged every calendar month (as recommended), this shower head provides an efficient barrier to the transmission of *Legionella* as confirmed in clinical validations in several European hospitals.

In the final session, Dr. Kevin Kerr, Harrogate District Hospital/UK, described how his team has evaluated the potential use of tap, sterile bottled, and filtered water for his ICU patients. Whilst bottled water was an option, concerns over the potential presence of *Stenotrophomonas maltophilia* (which he found in 13.6% of the samples he tested) led him to recommend the use of point-of-use filters. He could also demonstrate considerable cost saving by POU filtration. Dr. Kerr expressed concern over the safety of water coolers, which his latest research cast as potential sources of nosocomial infections.

After a Q&A session, Prof. Terry Gourlay, BHF Perfusion Specialist, NHLI, Imperial College, London, who organised the meeting, thanked all the speakers and wound up the proceedings pointing to abstracts of the presentations to be found at www.filtration-net.com.

Michael Reiter