

Target Audience

Trainee medical microbiologists, infection control doctors, public health registrars, infection preventionists with an interest in the built environment and the cause/prevention of waterborne infections, clinical and medical microbiologists with interest in *Legionella*, *Pseudomonas*, Non-Tuberculous Mycobacteria and other waterborne pathogens, those individuals who are members of Hospital Water Safety Groups in order to develop competence in managing water hygiene, biomedical scientists, clinical scientists training and working in microbiology and infection control, epidemiologists.

Course objectives

For attendees to gain an understanding of: the range, ecology and epidemiology of waterborne pathogens and the infections they cause; the importance of clinical and environmental surveillance; how to carry out outbreak investigations linking clinical isolates to the environment; the use of monitoring and sampling for routine water quality checks and waterborne pathogen detection including identification and typing methods; areas of risk within healthcare environments; what engineering control and remediation measures have a significant impact on preventing and controlling waterborne infection transmission; the interpretation and response appropriate to microbiological data arising from water sampling; Water Safety Groups and their role in the development and implementation of Water Safety Plans to manage water safety for all potential uses and users within the healthcare environment.

Continuing Professional Development

This course has kindly been awarded CPD points by the Royal Society for Public Health.



Contact Person

For the Scientific Programme

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Course Venue & Accommodation

Europa Hotel
Great Victoria Street
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Faculty Members

Joseph Falkinham (on-line presentation), Blacksburg, US
Hilary Humphries, Dublin, Eire
Theresa Inkster, Glasgow, UK
Diane Lindsay, Glasgow, UK
Sebastian Crespi, Palma de Mallorca, Spain
George McCracken (Host Engineer), Belfast, Northern Ireland
Joost Hopman, Nijmegen, Netherlands
Zofia Barna, Budapest, Hungary
Regina Sommer, Vienna, Austria
Vicky Katsemi, Agria Volou, Greece and Bonn, Germany
Maria Luisa Ricci, Rome, Italy
Susanne Surman-Lee, Ringwood, UK
Jimmy Walker, Salisbury, UK
Mike Weinbren, Chesterfield, UK
Catherine Whapham, Ludlow, UK
Stefan Zimmermann, Heidelberg, Germany
Elisabeth Presterl, Vienna, Austria

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ESCMID Postgraduate Education Course

An introduction to healthcare associated waterborne infections: ecology, prevention, mitigation and control

Belfast, United Kingdom
31 October – 2 November 2023



Organisers

- ESGLI (Legionella infection)

Other Organising Group(s):

- EFWISG (food and waterborne infection confirmed) and ESGNI (nosocomial infection)

Module Coordinators

- Susanne Lee**, Ringwood, UK (ESGLI)
- Diane Lindsay**, Glasgow, UK (ESGLI)
- Catherine Whapham**, Ludlow, UK (ESGLI)
- Stefan Zimmermann**, Heidelberg, Germany (EFWISG)
- Hilary Humphries**, Dublin, Eire (ESGNI)

Registration

Registration procedure

Register now online on the ESCMID website.

Registration Fee

Online Registration Fee for ESCMID Members: **200 EUR**
Online Registration Fee EUR for all others: **250 EUR**
Online Registration Fee for ESCMID YS Members: **75 EUR**
Online Registration Fee for ESCMID LMIC Members: **30 EUR**
Onsite Registration Fee for ESCMID Members: **650 EUR**
Onsite Registration Fee for all others: **800 EUR**

The onsite registration fee includes lunch, dinner, and bed & breakfast

Current annual ESCMID membership rate is €45.
For non-member registration please sign up as a "registered user" via [this link](#) before logging in and registering for the course.

For students, please apply for an attendance grant via [this link](#).

Module Programme

Day 1, Tuesday 31st October 2023

08:30 – 09:00 Registration & Refreshments

09:00 – 09:30 Course Opening & Welcome (& online)

09:30 – 12:30 including morning break

- An introduction to waterborne pathogens of significance in healthcare water systems, *Legionella*, *P. aeruginosa*, NTMs and other GNBs, CPOs, Fungi; sources, risk factors and modes of transmission; financial burden of waterborne HAI
- Epidemiology of hospital acquired legionellosis, *Legionella* species of concern, clinical risk factors, clinical diagnostic tests, modes of transmission, inhalation, aspiration and other risk factors for nosocomial pneumonia; clinical surveillance and testing; outbreaks of note
- Understanding hot and cold water systems, growth factors in hospital distribution systems and the role of major components; basics of keeping water systems safe (keep hot, keep cold, keep clean, keep it moving, keep it documented) and how that can be achieved, thermostatic mixing valves, the role of protozoa and biofilms.
- Evaporative cooling towers, water features, humidifiers, birthing and other pools; nebulizers, dental chairs etc.
- Physical and chemical methods of control (biocides in water systems: importance of validation and verification, chlorine dioxide, copper-silver ionisation, monochloramine, hydrogen peroxide; Physical measures including thermal disinfection, flushing, filtration, using artificial intelligence intelligently
- Discussion on setting targets for *Legionella* levels in healthcare settings
- Q&A from morning session

12:30 – 13:15 Lunch

13:15 – 17:00 including break

- Principles of microbiological sampling - how, when and where to sample, the value of additional parameters, the effects of transportation and storage, what to look for when investigating cases/ gross contamination
- The effects of transportation and storage, dealing with samples in the lab, processing samples, standard methods and common pitfalls when culturing environmental isolates, the importance of media QC and factors to consider when choosing an external environmental laboratory (accreditation, EQA etc.)
- The role of the reference lab, introduction to alternative identification techniques: rapid methods, sensitivity and specificity, clinical samples and typing
- Epidemiological analysis of nosocomial Legionnaires' disease

- Site Visit* - Group 1: Tour of boreholes/water treatment, plant rooms, HCWS. Group 2 and on line: Virtual risk assessments HCWS
- Feedback from tour / virtual risk assessment
- Q & A from afternoon session

*depending on staff availability and clinical considerations, site visit dates and times may change. A virtual version of the site visit will be arranged if needed.

18:30 onwards City Familiarisation Walking Tour & Welcome Get Together Dinner (optional)

Day 2, Wednesday 1st November 2023

08.30-09.30 Feedback, Questions & Answers from Day 1

09.30 – 12.30 including morning break

- An introduction to hospital acquired *P. aeruginosa* infections, diagnosis, prognosis, sources, modes of exposure and transmission, risk factors, endogenous and exogenous infections, clinical surveillance, epidemiology, outbreaks of note
- Outlet design, taking and handling samples; chains of evidence; practical aspects from a *P. aeruginosa* outbreak investigation, dismantling components and culture techniques
- The role of wastewater systems in the transmission of waterborne pathogens and AMR
- How do you know you have an outbreak? Clinical surveillance: culture and identification, overview of a *Cupriavidus paucimobilis* outbreak – lessons learnt
- Preventing ingress and colonisation in new builds and major refurbishments; risks from poor specification, competence, communication, design, installation, commissioning, design risk factors
- Removing water from the patient environment for high-risk groups, the pros and cons
- What constitutes high risk, WHO guidance on neutropenia and water exposure
- Q & A from morning session

12:30-13:15 Lunch

13:15 – 18:00 including afternoon break

- Other equipment hazards and risks; evaporative cooling systems, misting devices, dialysis, dental, endoscopy, Sterile Services – specialist water systems, hydrotherapy pools, assisted baths, whirlpool baths, risk factors; Microbiological sampling in Specialist Water Systems & Equipment – how, when and where to sample for faecal indicators and pathogens, TVC, endotoxin, control measures
- The struggle with the Hydra – infection controller's approach to the hospital water system

- Slow and rapid growing NTMs, clinical manifestations, at risk groups, water system risk factors, environmental sampling, mitigation methods
- Designing a lung transplant unit; what would you ask for to protect patients
- Water safety in buildings - introduction to water safety plans and water safety groups
- Skills and competencies, the importance of multidisciplinary team working, communication
- Non microbial hazards and hazardous events, Governance, gap analysis, working together
- Building on the *Legionella* risk assessment: The principles of risk assessments for *Pseudomonas aeruginosa* and other waterborne pathogens
- Taking account of not just the plumbing but also the environment, design, how water is used (by staff, patients and visitors)
- Checking paperwork; putting together the team
- Virtual *P. aeruginosa* risk assessment
- Q & A from afternoon session
- Tutorial – Expert Session: Managing an Outbreak

18:30 onwards Dinner (optional)

Day 3, Thursday 2nd November 2023

08:30 – 09:30 Feedback, Questions & Answers from Day 2

09:30 – 12:30 including morning break

- Tutorial – Expert Session: Managing an Outbreak
- Estates perspective: Describing the neonatal outbreak, dealing with an investigation, managing the press, the personal toll
- Environmental lab perspective ; *Mycobacteria chimera* investigations -practical lessons learnt, international collaboration
- Typing - the lab perspective, clinical and environmental typing. How many isolates from environmental and clinical cultures, the use of PCR on environmental samples in outbreaks
- On site investigation and audit, working with the regulators to find the source, communication, auditing records, on site investigations
- Emergency control measures – setting targets, when to de-escalate
- Communications aspects - what is conveyed to patients and their families and by whom, the how, when and who implications for any look back exercise
- Q & A from morning session

12:30 – 13:15 Lunch

13:15 – 17:00 Pulling it all together - Group activities

- Designing the ideal patient environment
- Risk assessment scenario based on a non-*Legionella pneumophila* case in a stroke patient
 - o Putting together a multidisciplinary team
 - o Who should be involved in the outbreak team
 - o Clinical patient pathway = where are the risks and what questions to ask
 - o Assigning tasks
 - o Virtual risk assessment
 - o Deciding on appropriate actions and remedial measures
 - o Communication press/patients/staff
 - o Surveillance
 - o Training needs
- Discussion and feedback
- Q&A from Days 1, 2 & 3
- Concluding Remarks
- Course Review/Evaluation by Attendees

17:00 Attendee Departure

