



## MEETING REPORT

# Fourth European Legionnaires' disease surveillance network (ELDSNet) annual meeting

Athens, Greece, 12–13 September 2013

## Summary

The fourth ELDSNet meeting was held in the National School of Public Health in Athens, Greece, on 12–13 September 2013. Sixty-four participants from 28 countries attended the meeting.

Presentations about the surveillance of Legionnaires' disease in Greece, Italy, Latvia and Slovenia were given. France reported a community outbreak of cases associated with a healthcare facility. In addition, Italy gave a presentation on the increase of reported cases in one hospital and the Netherlands gave a presentation on the impact of weather conditions on Legionnaires' disease. Spain presented on the role of the Spanish National Reference Laboratory (NRL) in cluster and outbreak investigations and there was a report from the ESGLI meeting.

Furthermore, the ELDSNet annual surveillance data for 2012, reported travel-associated cases for 2012 and ongoing projects were presented.

In order to better understand the participants' views on a number of important topics, the meeting included a session with two parallel working groups; laboratory issues and operating procedures were discussed.

A representative from SINTEF, an independent Scandinavian research organisation, gave an overview of *Legionella pneumophila* routes of contamination, establishment, survival and growth in a ship's freshwater systems.

The meeting ended with an update on the development of EPIS version 2 and the monthly ELDSNet report.

## Background

ECDC has been coordinating the European Legionnaires' Disease Surveillance Network (ELDSNet) since 1 April 2010. The tasks for the network include daily surveillance of travel-associated Legionnaires' disease, timely detection and immediate notification of clusters to the network, the close monitoring of cluster site investigations and control measures taken. It also includes the annual collection, analysis and reporting of cases of Legionnaires' disease notified by the EU Member States, Norway, Turkey and Iceland.

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*The views expressed in this publication do not necessarily reflect the views of the European Centre for Disease Prevention and Control (ECDC).*

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The epidemiological activities are complemented by outsourced centralised laboratory services. The Health Protection Agency's Atypical Pneumonia Unit in London was contracted to provide an inventory of *Legionella* reference laboratory capacities in Member States, EQAs and targeted training, enhanced investigation of clusters and a quarterly 'science watch' bulletin.

This report is from the fourth annual ELDSNet meeting under ECDC coordination.

## Objectives of the annual ELDSNet meeting

- To present and discuss the epidemiology of Legionnaires' disease in Europe in 2012.
- To present and discuss laboratory aspects of Legionnaires' disease surveillance in Europe.
- To discuss and recommend ways to systematically increase the numbers of clinical and environmental isolates available for typing.

## Planned outcomes of the annual ELDSNet meeting

- Updated and deepened knowledge on the epidemiology of Legionnaires' disease in Europe, on pertinent ongoing laboratory activities and on the use of The European Surveillance System (TESSy).
- A meeting report summarising the discussions and conclusions reached.

## Plenary session

### Welcome and opening

Professor Alkis Vatopoulos, from the National School of Public Health addressed the audience by welcoming the participants and gave a summary of the school's history.

The ELDSNet coordinator, Birgitta de Jong (ECDC), gave an overview of the programme, presenting the ECDC ELDSNet team and the support staff and addressing meeting-related administrative issues.

## Results of the annual data collection 2012

Julien Beauté (ECDC) gave a presentation on Legionnaires' disease in Europe 2012, ELDSNet annual surveillance data and figures were very close to the 2008–11 average. He noted that the overall notification rate was 11.5 per million inhabitants. Six countries – France, Spain, Italy, Germany, the Netherlands and the United Kingdom – reported 84 per cent of all cases. In total, 29 countries reported 5 852 cases during 2012. Characteristics of the cases were similar to those of previous years, such as age, gender, case–fatality rate and pathogens. There is still an under-ascertainment in eastern parts of Europe. There has been an improvement in the completeness of reporting; however, there are still a few shortcomings such as information on place of residence.

## Reported travel-associated cases for 2012

Emmanuel Robesyn (ECDC) reported that in 2012 there were 832 reported cases of travel-associated Legionnaires' disease. When studying the distribution by month of onset, it is clear that the highest numbers of cases were reported in June, July, August and September. France, Italy, the United Kingdom and the Netherlands each reported more than 100 cases during 2012. Spain, Sweden and Denmark reported over 40 cases each and the rest of the EU Member States reported fewer than 20 cases. The gender distribution analysis showed that significantly more men (approximately 600 cases) were reported than women (approximately 250 cases) and the age groups 50–80 years are the most commonly reported. Approximately 400 cases were reported to have survived and the same for unknown outcome and six per cent of cases (26 cases) were reported as deceased. The most common diagnostic method was the urinary antigen test and microbiological testing mostly resulted in *L. pneumophila* serogroup 1. Out of 1 218 visits the majority of cases (more than 900) were reported to be visits to hotels. The countries with the highest numbers of clusters, by country of infection, were Italy, Spain, France, Turkey and

Greece. Large clusters were reported by Spain (1 cluster of 36 cases), Italy (4 clusters with 6, 8, 9 and 10 cases, respectively) and Turkey (2 clusters with 5 and 6 cases, respectively).

Some 148 Form As (intermediate site assessment) and 146 Form Bs (final site assessment, some repeated for the same site) were submitted in 2012. More than half of the final Form Bs reported that *Legionella* bacteria were found in water samples from the accommodation sites.

Seventy-six summary reports were sent to tour operators, compared with 45 in 2011. In 2012, 33 reports type 1 (non-EU) and 43 reports type 2 (rapidly evolving clusters) were sent out. One accommodation site was published on the ECDC website in 2012.

## Laboratory activities

Tim Harrison, from the HPA in London, presented the laboratory activities related to the ECDC contract. He addressed the audience with an overview of the objective of the contract and the various deliverables and outputs.

## EQA results

A single distribution of the SBT EQA was made in 2013. The panel of five *L. pneumophila* strains was prepared to test the ability of labs to distinguish between strains which differed by a single nucleotide (single-allele variants), strains that differed by two nucleotides (double-allele variants), and the participants were also asked to use the new neuAh primers. Two SBT profiles were 'new' as they had not been submitted to the international database at the time of testing. Overall, labs performed well with an improvement over previous years. Sequence quality was generally good but one lab appears still to have 'house-keeping' problems with mislabelling/switching of sequences. The neuAh primers were shown to perform well and were formally incorporated into the SBT scheme.

Two PCR distributions were made. Overall performance for distribution 6 was poor with only 47% (*L. pneumophila*) and 57% (*Legionella* spp) results in agreement with the intended result. However, this was due to the very challenging nature of the panel with two samples containing low concentration of *L. pneumophila* (102 cfu/mL). Although still a challenging panel, results for distribution 7 showed a marked improvement (64% and 57% of agreement with intended results for *L. pneumophila* and *Legionella* spp. respectively): contamination and specificity issues were much improved in comparison to the last few panels, but sensitivity still remains an issue.

A single distribution of the 'detection of legionellae in water' EQA scheme was made – G83. Two samples were examined. Overall performance was very good with only one laboratory failing to detect the intended organisms in both samples.

Four *L. pneumophila* urinary antigen panels were sent out during the year. Overall results were very good with discrepancies largely due to variable performance of the assays in use. The panels included a sample which demonstrated the poor sensitivity of the rapid immunochromatographic tests compared to classic enzyme immunoassays. Use of multiple samples from an outbreak illustrated how the choice of assay could impact on a reference laboratory's ability to detect cases and so provide epidemiological data to track the source.

A short report was given regarding the progress being made with the ESGLI consensus *L. pneumophila* sgp1 triplex qPCR. The method is fully validated and documented for use of the Rotor-Gene Q platform, partially validated for the ABI 7500 and still in progress for the LC 480.

## The role of NRL in cluster detection and outbreak investigations in Spain

Carmen Pelaz Antolin, from Spain, gave a presentation on the situation in that country.

Spain has around 1000 cases of Legionnaires' disease per year. The National Reference Laboratory (NRL) offers microbiology services to all Regions (Autonomous Communities) and the activities are divided into four categories: diagnosis and detection, research, training and scientific advice. The NRL uses ECDC's technical report 'Core functions of microbiology reference laboratories for communicable diseases' as a reference document regarding its role<sup>1</sup>.

The Spanish NRL had seen a steady decrease in the number of samples over the years up to 2011. In response to this, the NRL changed its strategy and started to perform SBT (MAb typing was previously used) and to apply nested PCR SBT. This has resulted in an increase since 2012.

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<sup>1</sup> European Centre for Disease Prevention and Control. Core functions of microbiology reference laboratories for communicable diseases. Stockholm: ECDC; 2010. Available from [http://www.ecdc.europa.eu/en/publications/Publications/1006\\_TER\\_Core\\_functions\\_of\\_reference\\_labs.pdf](http://www.ecdc.europa.eu/en/publications/Publications/1006_TER_Core_functions_of_reference_labs.pdf)

The position of the NRL in outbreak investigations is important. The NRL function links with a variety of professional disciplines, such as clinicians, clinical microbiologists, epidemiologists, environmentalists, environmental microbiologists and disinfection treatment experts.

The NRL contributes to the investigation of clusters, promotes collaboration between disciplines and provides expertise in decision-making on prevention and control measures.

A question was asked about the financing of the NRL in Spain and it was explained that services are delivered free of charge for individuals and also during outbreaks. A discussion addressed the question of the role of regional laboratories and how this affects the NRL roles. There was a plea to have EU (ECDC) support for NRLs. It was stressed how important it is to make NRL services very accessible.

## Report from ESGLI business meeting

Søren Uldum and Jeroen den Boer gave feedback from the business meeting of the ESCMID study group for Legionella infections (ESGLI) in Berlin, April 2013.

A reminder letter had been sent to people who expressed their interest the previous year, but who had not to date registered as members. Regarding the membership, it was pointed out that only very few epidemiologists are currently ESGLI members. Therefore, a plea was made to have more epidemiologists on board. This is important to prevent a split between the disciplines of epidemiology and microbiology in the field of Legionnaires' disease public health research and action.

For 2013 no annual meeting had been arranged since the international conference would be in Melbourne, Australia. The 2014 ESGLI meeting will be in Barcelona. An ESGLI training course will take place in April 2014 in Sicily.

Further, a 3plex PCR research study is ongoing, as well as a MALDI TOF (matrix-assisted laser desorption-ionization time-of-flight) study. For the latter, more strains are sought. There is also a plan to conduct a study for validation of newer urinary antigen tests. The ESGLI guidelines will be updated. The presenters gave an overview of the papers that have been published and that are planned to be published.

## Legionella situation in Greece

Georgia Spala, from Greece, gave an update on the surveillance system and the epidemiology of Legionnaires' disease in that country. The island of Crete and the Ionian Islands were the most affected regions in 2012. In recent years, preventive and control measures have been implemented such as systematic sampling in hotels and other public sites; this has been in place since 2012.

## Community outbreak linked to a healthcare setting

Christine Campése, from France, reported on the investigation of an outbreak of community and healthcare-associated Legionnaires' disease. It identified many issues with the water system of the healthcare facilities.

## The increase of reported cases of Legionnaires' disease in Latvia

Antra Bormane, from Latvia, reported on a significant increase in the number of reported Legionnaires' disease cases that were observed during 2011. The characteristics of these cases seemed slightly different from those reported in other countries. Contributing factors to the increase could include a change in water use, increased awareness of the disease, and weather conditions. The high proportion of cases reported with serology was questioned by the audience.

## The increase of reported cases of Legionnaires' disease in Slovenia

The surveillance system in Slovenia was described by Maja Socan and Darja Kese. Notification rates of Legionnaires' disease were reported and put into perspective with published data from Slovenia. Although notification rates are amongst the highest in Europe, it was concluded that Legionnaires' disease remains under-diagnosed and under-reported in Slovenia with important regional disparities. Between 3 and 5% of specimens tested positive for *Legionella*.

## Increase of reported cases in a hospital

Maria Luisa Ricci, from Italy, gave a presentation about incorrect laboratory diagnoses that were suspected during an investigation of an increased number of healthcare-associated Legionnaires' disease cases in Italy. Discordances in urinary antigen test results in two hospital laboratories were identified. The National Reference Centre confirmed half of the reported cases (9/18). The company producing the test kits subsequently issued a warning for lots that were associated with false positives.

## Weather conditions and impact of Legionnaires' disease

Petra Brandsema, from the Netherlands, gave a presentation on a model developed in 2008 to estimate the impact of weather conditions on the incidence of Legionnaires' disease. The model was updated to explore the peak observed in summer 2010 in the Netherlands. In the multivariate analysis, explanatory variables included temperature, rainfall duration and intensity. Warm weather followed by heavy rainfall was associated with an increased number of cases.

## Overview of *Legionella pneumophila* routes of contamination, establishment, survival and growth in a ship's freshwater systems

Catrine Ahlén from SINTEF, an independent Scandinavian research organisation, gave this presentation. She showed that the freshwater systems were easily contaminated by *Legionella* spp. at the water bunkering point.

## Working groups

### Introduction to working groups

In order to better understand the participants' views on a number of important topics, a session with two parallel working groups was included.

Working group 1: Laboratory issues

Chair: Birgitta de Jong; Rapporteur: Camilla Croneld

Working group 2: Operational procedures

Chair: Emmanuel Robesyn; Rapporteur: Julien Beauté

The general purpose of these working groups was to provide a forum for focussed exchange of experiences and ideas. Participants were asked to discuss specific questions and provide recommendations that should support ECDC and the ELDSNet coordination group to fulfil their mandate of coordinating and continuously improving Legionnaires' disease surveillance in Europe.

### Feedback from working groups

#### Working group 1: Laboratory methods

Three topics were discussed during the working group session on laboratory methods. The first topic was related to the content of a call for tender 'Laboratory support for the surveillance of Legionnaires' disease at European Level' published by ECDC. Birgitta de Jong informed the working group that one of the lots 'Ensure a high quality of laboratory diagnosis, sequence typing and environmental investigation in all reference laboratories by running a number of external quality assessment schemes (EQA)' needs to be re-launched.

The second topic covered the EQA survey that is available on the ELDSNet extranet. There was a consensus that EQA schemes at national level should continue. There should be a mix of easier and more advanced samples, i.e. for UAT 10 samples per distribution. It was also agreed that two distributions of water samples should be carried out.

Lastly, the integration of molecular typing data into EU-level surveillance was discussed. It was agreed that a working group will be set up to further discuss the topic and volunteers from the United Kingdom, Germany, France, the Netherlands, Italy and Spain were identified.

## Working group 2: Operational procedures

This working group discussed four topics.

The first topic was the revised forms A and B, and a new form C to be used in the event of rapidly evolving clusters, and that they will be posted on the EPIS ELDSNet general discussion forum for comments. The new forms will then be incorporated into the revised version of EPIS ELDSNet. The network members were reminded that their contact details (names and emails) are available via EPIS, and that unless we receive objections, ECDC will keep them there. This allows countries to contact each other easily.

The second topic was the revision of the way standard and complex cluster names are changed/updated in the event of new cases.

The third discussion related to the possibility to populate the TESSy database with a near complete list of commercially or publicly available accommodation names. The potential advantage of doing so is to improve the quality of reporting and cluster detection.

The fourth and last discussion was about sharing cluster information, in particular with tour operators. A presentation by the Netherlands accompanied the discussion. As a result of the discussion, no changes to the ELDSNet procedures will be made. Instead, a series of communication actions will be taken before the next meeting.

ECDC noted that a study is planned to examine the extent of recurring cases in hotels over a longer period. The working group proposed also that ELDSNet will not use the term 're-offenders' anymore as this unjustifiably suggests fault.

## Laboratory support – Lot 1 of the tender

Jeroen den Boer gave a presentation on the laboratory support foreseen under Lot 1 of the call for tender, which will include standardised diagnostic and surveillance methods across national reference laboratories and also cover training activities and monitoring scientific developments. The aim is to support ELDSNet with a series of protocols to cover diagnostic and surveillance methods. These protocols should not replace the existing relevant protocols but should rather facilitate the optimisation of diagnosis and typing. ELDSNet is asked to review and comment on the final documentation, after which a best practice protocol will be adopted and implemented. Training will be available, one week in Haarlem, the Netherlands, and three courses per year will be offered.

## Update on ongoing projects at ECDC

Julien Beauté gave the update, beginning with some background information on the environmental conditions associated with Legionnaires' disease in Europe. He also gave updates on the evaluation of the cluster definition in TALD, delocalisation of cases during a community outbreak, the Legionnaires' disease spatial analysis tool and use of urinary antigen tests in Europe.

## Coordination group activities

A presentation on the coordination group activities was given by Günther Wewalka. The group requested that ECDC continue with the EQA schemes for the national reference laboratories, continue co-operation with ESGLI concerning annual meetings and other issues and to facilitate procedures for investigating cruise ships in the event of clusters.

## Update on the development of EPIS version 2

Emmanuel Robesyn gave an update on EPIS ELDSNet version 2. In September 2013 the development started and will continue during 2014. There will be a user acceptance test carried out in the final stage of the development. The discussion forum is still open for comments on the current version and for suggestions for further improvements.

## Monthly ELDSNet report and updates

Dana Ursut and Julien Beauté gave a presentation on the monthly ELDSNet report as well as updating on previously reported cases and cleaning of the database. The ELDSNet monthly report was released in a new format in June 2013. Dana Ursut gave detailed explanation on how to update cases already reported to TESSy.

## Next network meeting 2014

No decision was taken as to where the ELDSNet annual meeting 2014 should be held. However, the wish was expressed by the network members to have it back-to-back with the ESGLI annual meeting.

## Closure

Birgitta de Jong thanked the Greek hosts, especially Emmanuel Velonakis and his staff for co-organising the ELDSNet meeting 2013 and for their hospitality. She subsequently thanked all participants for attending and actively contributing, and closed the meeting.

## Annex 1 Agenda

12 September	
09.00 – 10.30	Plenary session (Chair: Birgitta de Jong)
09.00 – 09.15	Welcome and opening – <i>Birgitta de Jong</i>
09.15 – 09.35	Results of the annual dataset collection 2012 – <i>Julien Beauté</i>
09.35 – 09.55	Reported travel-associated cases for 2012 – <i>Emmanuel Robesyn</i>
09.55 – 10.30	Laboratory activities – <i>Tim Harrison</i>
10.30 – 11.00	Coffee (Individual TESSy/EPIS coaching if required – Dana Ursut)
11.00 – 12.30	Plenary session (Chair: Emmanuel Velonakis)
11.00 – 12.00	EQA results – <i>Tim Harrison</i>
12.00 – 12.15	The role of the NRL in cluster and outbreaks investigations – <i>Carmen Pelaz Antolin</i>
12.15 – 12.30	Report from ESGLI meeting – <i>Søren Uldum/Jeroen den Boer</i>
12.30 – 13.30	Lunch (Individual TESSy/EPIS coaching if required – Dana Ursut)
13.30 – 15.00	Plenary session Chair: Irina Dontsenko)
13.30 – 13.45	Legionella situation in Greece – <i>Georgia Spala</i>
13.45 – 14.00	The increase of reported cases of Legionnaires' disease in Latvia – <i>Antra Bormane</i>
14.00 – 14.20	The increase of reported cases of Legionnaires' disease in Slovenia – <i>Maja Socanj/Darja Kese</i>
14.20 – 14.40	Community outbreak linked to a healthcare setting - <i>Christine Campese</i>
14.40 – 15.00	Increase of reported cases in a hospital- <i>Maria Luisa Ricci</i>
15.00 – 15.30	Coffee (Individual TESSy/EPIS coaching if required – Dana Ursut)
15.30 – 16.30	Plenary session (Chair: Maria Cristina Rota)
15.30 – 16.00	Weather conditions and impact on Legionnaires' disease – <i>Petra Brandsema</i>
16.00 – 16.30	Overview of <i>Legionella pneumophila</i> routes of contamination, establishment, survival and growth in a ship's freshwater systems – <i>Catrine Ahlén SINTEF SeaLab</i>
19.00 – 22.00	Dinner



13 September	
	Working groups
09.00 – 10.30	WG 1 Laboratory - <i>Birgitta de Jong/ Camilla Croneld</i> WG 2 Operational procedures - <i>Emmanuel Robesyn   Julien Beauté</i>
10.30 – 11.00	Coffee break (Individual TESSy/EPIS coaching if required– Dana Ursut)
11.00 – 13.00	Plenary session (Chair: Birgitta de Jong)
11.00 – 11.30	Feedback from working groups
11.30 – 11.45	Laboratory support, Lot 1 – <i>Jeroen den Boer</i>
11.45 – 11.55	Update ongoing projects at ECDC – <i>Julien Beauté</i>
11.55 – 12.05	Coordination group activities – <i>Günther Wewalka</i>
12.05 – 12.20	Update on the development of EPIS version 2 – <i>Emmanuel Robesyn</i>
12.20 – 12.40	Monthly ELDSNet report, updating of previously reported cases and cleaning of data base – <i>Dana Ursut/Julien Beauté</i>
12.40 – 12.45	Next network meeting in 2014
12.45 – 13.00	Wrap up and closure – <i>Birgitta de Jong</i>
13.00 – 14.00	Lunch

## Annex 2 Participant list

Country	Name
Austria	Wewalka Gunther
Austria	Bondanini Maria-Grazia
Belgium	Echahidi Fedoua
Belgium	Denis Olivier
Belgium	Braeye Toon
Bulgaria	Tomova-Tsvetkova Iskra
Bulgaria	Marinova Lili
Croatia	Radic Ivan
Croatia	Peršić Zdenka
Czech Republic	Drašar Vladimir
Czech Republic	Martinková Irena
Denmark	Uldum Soren Anker
Denmark	Bangsborg Jette
Estonia	Dontsenko Irina
Estonia	Peetso Rita
Finland	Jaakola Sari
Finland	Mentula Silja
Finland	Kusnetsov Jaana
France	Jarraud Sophie
France	Campése Christine
Germany	Luck Christian
Greece	Velonakis Emmanouil
Greece	Spala Georgia
Greece	Papadimitriou Theodoros
Greece	Avramidis Stathis
Greece	Papathanasiou Ioanna
Greece	Papageorgiou George
Greece	Panousis Nikos
Greece	Flountzi Nancy
Greece	Karambinas Theodore
Hungary	Fehér Agnes
Hungary	Ildiko Paluska
Ireland	McCran Lorraine
Ireland	Kelly Tara
Italy	Rota Maria Cristina
Italy	Ricci Maria Luisa
Latvia	Bormane Antra
Latvia	Dušaka Diāna
Lithuania	Zukauskaitė Simone
Lithuania	Barauskas Artūras
Malta	Seychell Caroline
Netherlands	Brandsema Petra
Netherlands	Den Boer Jeroen

Country	Name
Norway	Caugant Dominique
Norway	Catrine Ahlén
Poland	Czerwinski Michal
Poland	Piekarska Katarzyna
Portugal	Marques Maria Teresa
Portugal	Nascimento Marina Ramos
Romania	Chicin Gratiana
Romania	Cotar Ani Ioana
Slovakia	Simonyiova Danka
Slovakia	Gicova Anna
Slovenia	Keše Darja
Slovenia	Sočan Maja
Spain	Pelaz Carmen
Spain	Cano Potera Rosa
Sweden	Löfdahl Margareta
Sweden	Andersson Sabina
Switzerland	Gaia Valeria
United Kingdom	Phin Nick
United Kingdom	Harrisson Tim
United Kingdom	Chalker Vicki
United Kingdom	Mentasti Massimo

## ECDC Staff

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