

### Human Samples

It is recommended that all suspected cases – patients in a high-risk category – are investigated promptly by **urinary antigen testing**.

The use of enzyme immunoassays (EIAs) for detecting *L. pneumophila* antigen in urine allows Legionnaires' disease to be diagnosed early in the course of infection. It is a convenient and rapid test (15min–3h) with reasonable specificity (80–85%) and sensitivity (75–99%) for *L. pneumophila* serogroup 1. It is detectable in most patients between one and three days after the onset of symptoms, and may persist for some weeks or months.

Positive tests should be confirmed by Immunofluorescent antibody (IFA) testing at the Scottish Legionella Reference Laboratory. Where there is a high level of suspicion then IFA testing should be performed because it detects disease caused by Legionellae other than *L. pneumophila* serogroup 1.

Sputum samples should be considered for culture in suspected cases, even when sputum is not purulent. It is strongly recommended that sputum samples are taken as soon as possible in suspected cases.

Other methods for Laboratory Diagnosis of Legionellosis include the detection of the bacterium in tissue or body fluids by Immunofluorescent microscopy (e.g. direct immunofluorescence assay (DFA) testing) - available in the Scottish Legionella Reference Laboratory; and detection of bacterial DNA in respiratory specimens using polymerase chain reaction (PCR) - not fully validated but available in Reference Laboratory.

All *Legionella* isolates from patient and environmental specimens should be submitted to the Reference laboratory for speciation, serotyping and genotyping. PCR detection methods may develop enough to allow genotyping of Legionellae in culture negative specimens.

### Samples from Water Systems

"Analysis of water samples for *Legionella* should be carried out by a UKAS accredited laboratory, which takes part in the HPA Water Microbiology External Quality Assessment Scheme for the Isolation of *Legionella* from Water. The interpretation of any results should be carried out by experienced microbiologists."

Paragraph 188 of *The HSE Approved Code of Practice and Guidance on The Control of Legionella Bacteria in Water Systems – L8*

**Risk assessment** process to consider in the event of an outbreak of *Legionella*, principles of **Risk Communication and Control measures** are expanded in sections 6, 7 and 8 of the full guideline.

#### Health Protection Network

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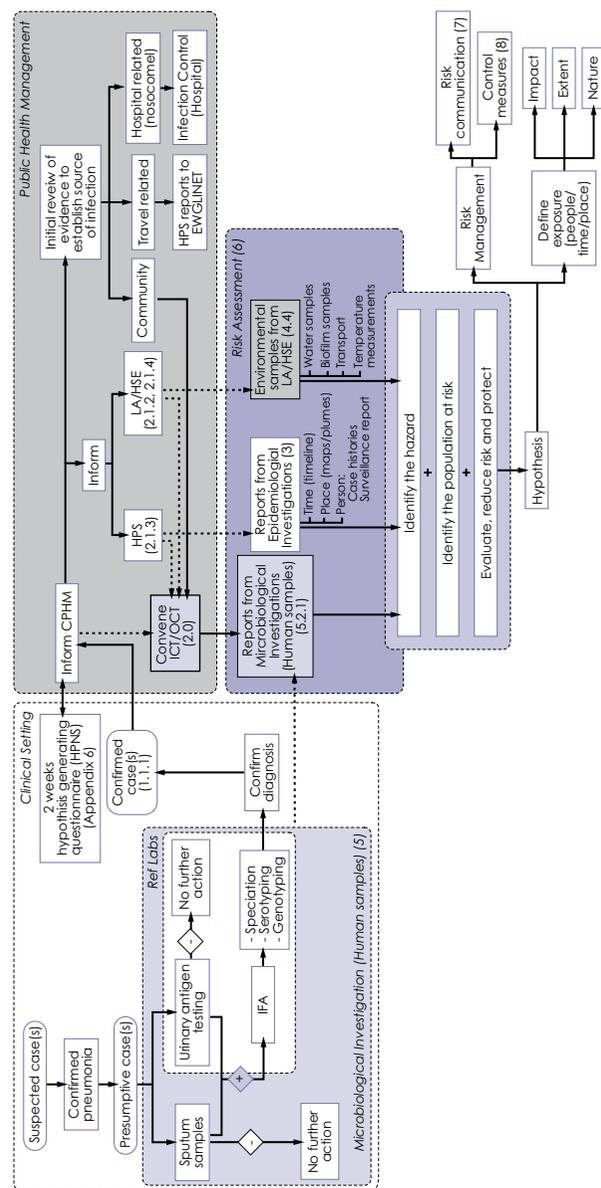
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## Guideline on Management of *Legionella* Incidents, Outbreaks and Clusters in the Community Quick Reference Guide

### Health Protection Network Scottish Guidance

March 2009

## Investigation and Management in the event of an incident, clusters and/or an outbreak of Legionellosis in the community



## Initial Response: Activating an Incident Control Team

NHS Boards and Local Authorities have jointly established incident plans to investigate incidents and/or major outbreaks of Legionellosis (see section 2.0 of the full document). Roles and responsibilities of the agencies involved are expanded in section 2.1 of the full guideline.

## Investigation and Management

Every single case of *Legionella* should be fully investigated in a timely fashion. This might be the first case in an outbreak and prevention of further cases is the priority.

- **Case definition and epidemiological investigation** (section 3)
- **Investigation of "Water Systems"** (section 4)

There is sufficient evidence from previous outbreaks to identify the "high-risk" sources likely to cause major outbreaks. The number of water systems that can become contaminated is substantial, but many will present a "low-risk" of causing an outbreak due to limited ability to cause aerosol dispersion.

The risk scale proposed here (Table 1: Risk Scale) is not rigid, and it is based essentially on three factors: 1) potential for dissemination of aerosol; 2) the number of people likely to be affected in an outbreak; 3) the frequency that these installations are involved in outbreaks.

The following is a "working" or "practical" list based on the information within the published papers and other information. It is recognised however, that virtually any water source can become contaminated with *Legionella* and, if favourable conditions occur for growth and dissemination in the context of inadequate control, then exposure and infection may occur. A "low-risk" source does not necessarily mean that potential for infection is always low. The risk of exposure/infection may be high and the numbers of people affected are unpredictable.

Table 1: Risk Scale for Potential Sources of Legionella in Installations

High-risk sources
<ul style="list-style-type: none"> <li>• Cooling towers/evaporative condensers/air conditioning systems – associated with major environmental/community outbreaks</li> <li>• Hot and cold water systems (particularly in hospitals, hotels – often related to showerheads –, leisure facilities and care homes to a lesser extent)</li> <li>• Whirlpools/spa baths (both "display" and leisure).</li> </ul>
Medium-risk sources
<ul style="list-style-type: none"> <li>• High pressure hosing/cleaning</li> <li>• Car wash</li> <li>• Industrial water systems (engineering machine coolants, "closed" water system in plastics)</li> <li>• Fountains.</li> </ul>
Low-risk sources
<ul style="list-style-type: none"> <li>• Sewage plants</li> <li>• Ship water pump repair</li> <li>• Gardening potting soil (specific <i>Legionella</i> species: <i>L. longbeachae</i>)</li> <li>• Garden sprinkling water systems (both from indoor and outdoor taps)</li> <li>• "Respiratory therapy devices" which generate aerosols (health care related); "Aerosolising" devices</li> <li>• Contaminated hospital equipment</li> <li>• Hot spring bath water</li> <li>• Public bath water</li> <li>• Ice machines</li> <li>• Dental equipment</li> <li>• Food display humidifiers.</li> </ul>

The type and volume of sampling required during an investigation is directed by the epidemiological information that is available at the outset of the investigation. Further details on water systems sampling can be found in section 4.4.

Details on training and equipment to sample potential sources can be found in section 4.5.