Risk Management of water systems in residential homes: The ‘process’ of Legionella prevention

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Challenge and research aim

• ‘Guide to Legionella Risk Assessment’ (Water Management Society)
• ‘duty holder’, ‘responsible person’, ‘deputy responsible person’ and ‘other key persons’
• Responsible Heads of Estates and Facilities
• Residential homes = elderly people
• Shower heads = aerosols

Aim (intrinsic)
Case study on present state of Legionella risk management

Motivator (extrinsic)
New Legislation: Introduction of a maximum level for Legionella in water used for showers
Theory, background & context

«Legionella» and «Pseudomonas» are ‘prominent’ representatives for issues of water hygiene and risk management of water systems.

FM in healthcare

Duties

Liability (§§ legislation, standards, recommendations)

Different roles & duties (interdisciplinary; inside and outside the organisation)

Present condition of facilities (water systems, water hygiene, risk management)

Situations with «at risk» status

Is a generalised «process» of Legionella prevention of water systems possible or subject to parameters or criteria specific to facilities?
Methodology

Case Study research design
- Sample size: 10 residential homes, randomly selected in the canton of Zurich.

*Legionella* in shower outlets
- Comliance with FOPH?

**Data A**
- Microbiology testing
- Water samples of shower heads
- *Legionella pneumophila*
- *Legionella* spp.
- Microbiological testing according to SN EN ISO 11731-2:2008-05
- Culture method and FCM-IS

**Data B**
- Questionnaire about the water system of the facility
- 5 categories:
  - General questions
  - System properties
  - Hygiene / maintenance
  - Monitoring / recording
  - Showers

**Sampling**

**Present situation**
<table>
<thead>
<tr>
<th>Question</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines for water hygiene quality?</td>
<td>FOPH</td>
<td>QMS</td>
<td>n/a</td>
<td>FOPH</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>PHI</td>
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</tbody>
</table>
| Controls and frequencies conducted on the water system?     | [This question was answered with a very wide variation of control measures and frequencies. It requires a separate, in-depth discussion from an operative perspective.]
| Parts of the water system that have been replaced or reconstructed? | y | y | n/a | n/a | y | y | y | n | y | n/a |
| Problems of water quality in past?                          | y | n | y | n | y | n/a | n | n | n | n/a |
| Dead lines in water system?                                 | y | n | n/a | n | y | n/a | n/a | n | n/a | n |
Conclusion

Generalisation impossible, but indications:

• Legal framework or potential threats are not always identified sufficiently

• Determination of strategies to counteract *Legionella*

• For risk assessment: Considering parameters specific to the organisation

• ‘Defective’ water system reducing the facilities’ value

• Hazard to people and the responsibilities of duty holders

→ **Professionals with operator duties must bear all this in mind!**
Recommendation to practitioners

• Although guided by WHO’s water safety plan, «blind spots» remaining
• One shouldn’t neglect or trivialise issues of water hygiene
• Ascertain the present state of your organisation’s water system
• Keep records up to date and make available
• Improve continuously
• Manage risks (education, qualified personnel)
• Legal obligations, technical standards

➔ no universal solution available!
Suggestions for future research

• For FM’s: Orientation/Guidance for people on duty
• Identification of process owners, description of roles, tasks and duties
• Internal and external considerations and forces combined ensuring water hygiene

→ How to mobilise?
• Examples of «best practice», Case studies considering practice and research
• Crossing borders of «old habits» or «fear of failing»

→ e.g. an international platform for FM’s, sharing experience
References


