



Public Health  
England

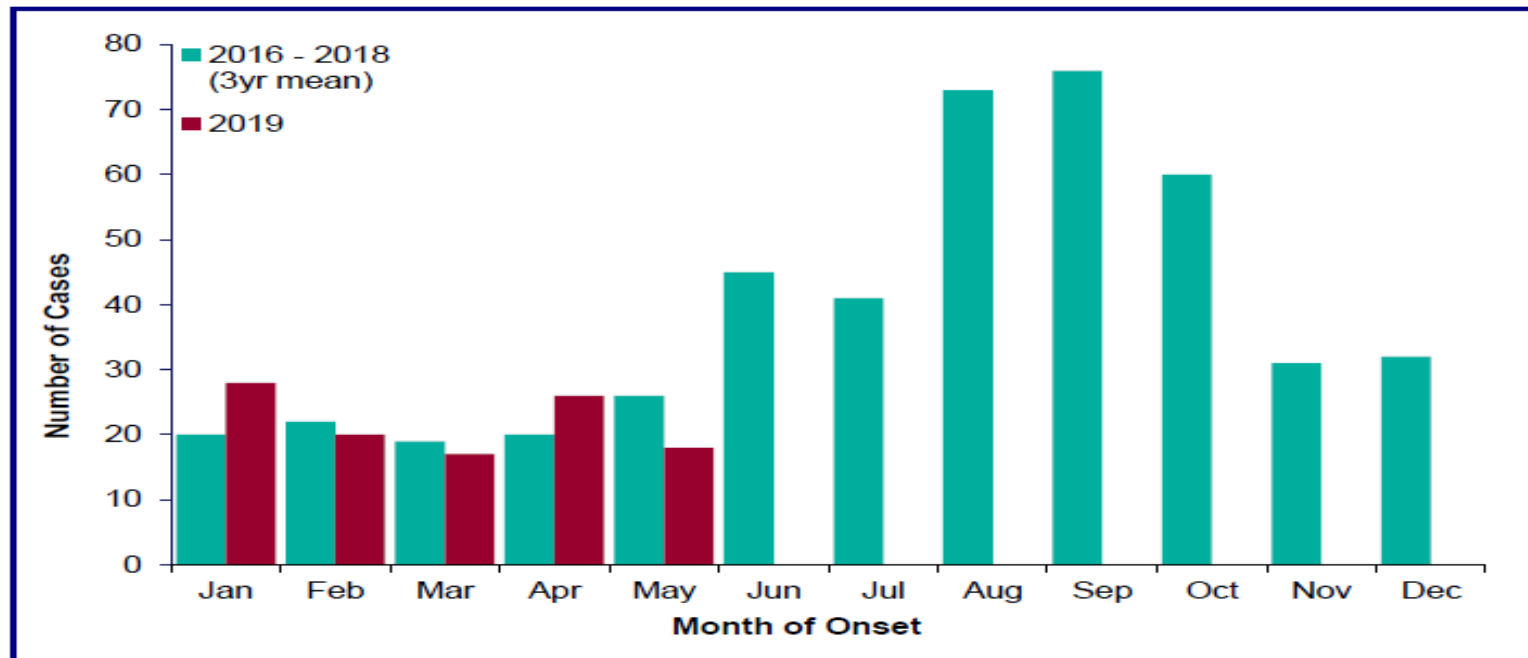
# Identifying unusual potential sources of Legionella

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# Legionnaires' disease cases – England and Wales

Figure 2: Confirmed\* cases of LD by month of onset (May 2019 against monthly mean for previous 3 years)



\* cases confirmed to have pneumonia and laboratory confirmation of Legionella infection; includes some with incomplete data.

<https://www.gov.uk/government/collections/legionnaires-disease-guidance-data-and-analysis>



# UK Legionnaires' disease 2015 - 2018

	Confirmed cases 2015	Confirmed cases 2016	Confirmed Cases 2017	Confirmed Cases 2018
<b>Community</b>	139	162	183	273
<b>Nosocomial</b>	14	6	6	11
<b>Travel abroad</b>	174	146	215	187
<b>Travel UK</b>	44	30	44	61
<b>Unassigned</b>	0	1	0	0
<b>Total</b>	371	345	448	532



Legionella and the prevention of Legionellosis is an excellent free downloadable document;

This covers;

- Ecology of the organism, including how it lives with other hosts and in biofilms
- Microbiology techniques to confirm cases and environmental samples
- Risk assessments / Water Safety Plans
- Key settings; Hospitals, Hotels, Spa pools and Ships

[https://www.who.int/water\\_sanitation\\_health/publications/legionella/en/](https://www.who.int/water_sanitation_health/publications/legionella/en/)



# Peer Reviewed Articles of Interest;

## **Legionella and weather associations in US;**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2870637/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5652433/>

## **Presence of Legionella in soils, Netherlands study;**

<https://aem.asm.org/content/82/17/5125>

## **Legionella in water butts PHE England, (note PCR techniques used)**

<https://www.ncbi.nlm.nih.gov/pubmed/29969060>



# Cases, Clusters, Outbreaks - in the news

Cases, clusters and outbreaks do occur - and may appear as single cases with no definitive link to a particular source

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## Hospital fined £300k after Legionnaires' disease death

20 April 2018

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The Royal United Hospital (RUH) in Bath has been fined £300,000 for health and safety breaches after a patient died from Legionnaires' disease.

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## Legionnaires' tests after Lincoln Prison death

7 December 2017

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Water samples at the prison have been sent for testing



# A (very) Large Outbreak Portugal 2014

October – December 2014

403 cases (377 confirmed) Legionnaires' disease

14 deaths

49 possible sources –

4 potential sources

Epidemiological and microbiology links to cooling tower

71 clinical isolates having the same SBT profile as found in the cooling tower

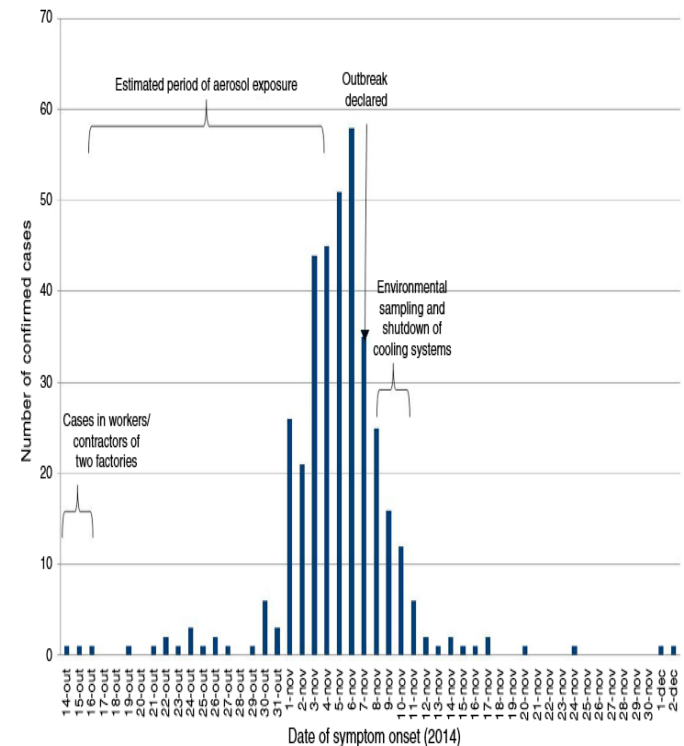


Fig. 1 - Confirmed cases of Legionnaires' disease by date of symptom onset, Vila Franca de Xira, Portugal, 14 October-2 December 2014 (n=377).



# Aerosol Producers – Wet Cooling Towers







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# Potential Recreational Exposures; Hot tubs and spa pools

**Birthing pools as a source of exposure;**

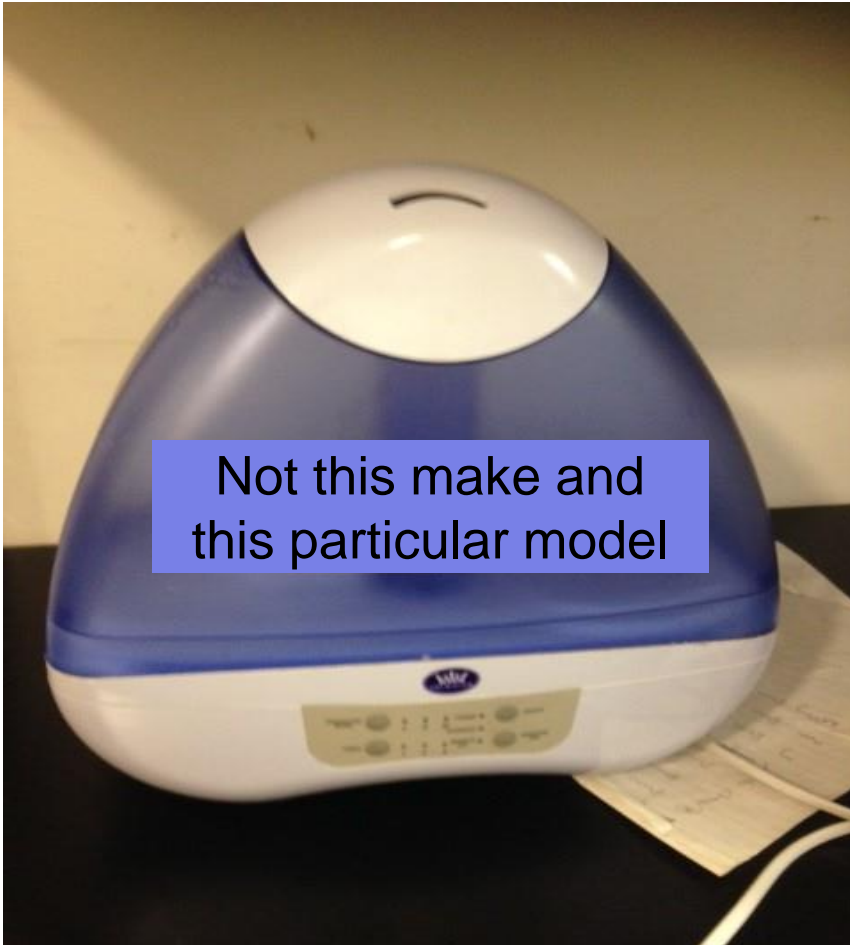
<https://www.ncbi.nlm.nih.gov/pubmed/26289365>

**Aerosolisation from hot tubs;**

<https://aem.asm.org/content/81/2/555>

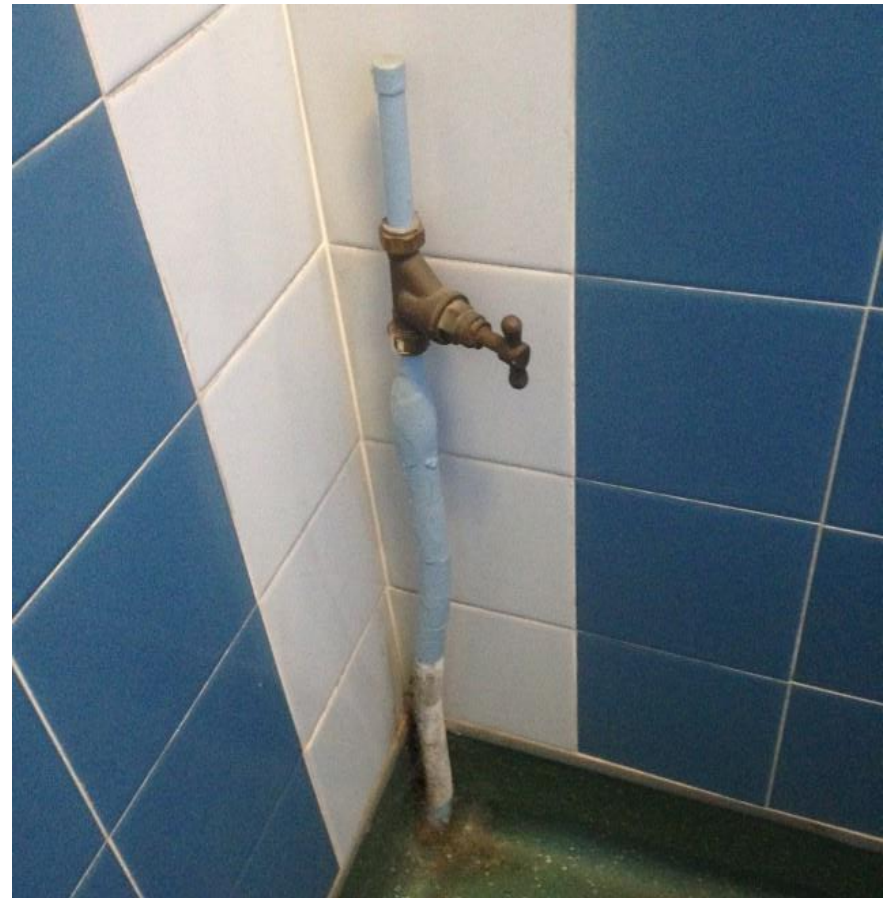


# Occupational (domestic)/Workplace Exposures





# 'Domestic' Hot and Cold Water Systems





- National survey June 2017 – November 2017
- Legionella water samples from showers, spas and swabs from gym equipment
- 886 water samples tested for Legionella:
  - 736 from showers
  - 148 from pools –
    - 126 spa pools,
    - 20 swimming pools and
    - 2 other pool types



## Pool Water Sample Results – Legionella

	Total tested	Borderline	Unsatisfactory
Hotel	74	6 (8%)	0
Leisure Centre	50	3 (6%)	0
Independent Gym	17	4 (24%)	0
Other *	7	0	1 (14%)
<b>Total</b>	<b>148</b>	<b>13 (9%)</b>	<b>1** (0.5%)</b>

\* A wide variety including sports clubs, prison gym, sports pitches, saunas

\*\* A spa pool in a health club (chain)



# Shower Sample Results - Legionella

	Total Tested	Borderline	Unsatisfactory
Hotel	109	5 (5%)	1 (1%)
Leisure Centre	318	13 (4%)	14 (4%)
Independent Gym	281	6 (2%)	8 (3%)
Other *	28	0	1 (4%)
<b>Total</b>	<b>736</b>	<b>24 (3%)</b>	<b>24 (3%)</b>

\* A wide variety including sports clubs, prison gym, sports pitches, saunas



- **Water Safety Plans** - essential for water management
- **External Expertise** – used to assist water management
- **Robust Operating Procedures** – SOPs and EOPs (NOPs and EAPs)
- **Training and Supervision** - of operational **and managerial** staff
- **Monitoring** – robust monitoring. Essential for water management
- **Sampling** - to verify water management
  
- **Sampling** - as an investigative tool in incidents where indicated - including cases, clusters and outbreaks
- **Testing** - in a laboratory accredited for testing

[http://www.who.int/water\\_sanitation\\_health/emerging/legionella.pdf](http://www.who.int/water_sanitation_health/emerging/legionella.pdf)



There are many potential sources of Legionella in unusual aquatic and none aquatic systems – but management of water systems remains key !







# Questions

# Thanks

PHE, LA, NHS  
colleagues