

Hazard/threat category	Sub-category
Human health	Legionella/Meningitis outbreak
Hazard and threat description, plus scale	Risk reference number
Localised outbreak, with up to 10 fatalities and up to 50 casualties	HL24
Date of revision	Next review
NOVEMBER 2007	NOVEMBER 2008
Author	Health representative to TVLRF

1. Overview of hazard or threat

Legionnaires' disease is an uncommon form of pneumonia that may have serious consequences for some people, especially people in the older age groups. People become infected when they breathe in air that contains legionella bacteria which have been dispersed into the air in very fine droplets of water known as aerosols. If the bacteria get inhaled into the lungs they can cause infection. The bacteria live naturally in environmental water sources but if they get into water systems in buildings they can cause a risk to humans through air conditioning systems or through contaminated water systems used for showers etc. Control and prevention of the disease is through treatment of the source of infection i.e. the contaminated water systems. Legionnaires' disease does not spread from person to person.

Meningitis is the inflammation of the linings of the brain and spinal cord, while septicaemia is the blood poisoning form of the disease.

Bacteria or viruses usually cause meningitis. Bacterial meningitis is more serious and can be caused by a range of different bacteria, although meningococcal bacteria cause most cases in the UK.

Meningococcal bacteria can cause meningitis or septicaemia or both; together these two forms of the disease are known as meningococcal disease. Overall, more than 90% of people who get meningococcal disease recover. Of the two forms, septicaemia is more dangerous. While fewer than 5% of people with meningococcal meningitis die of the disease, the death rate for meningococcal septicaemia alone with no symptoms of meningitis is around 20%.

Meningococcal bacteria can be divided into several groups, but groups A, B, C, W-135, and Y causes nearly all disease. In recent years Group B has caused up to 60% of cases in the UK, with the remaining cases caused by Group C and more rarely by the other groups listed. Now that MenC vaccine is available, providing effective protection against Group C meningitis and septicaemia, this strain of the disease is declining. Group B, for which there is no effective vaccine, has been unaffected by the Men C vaccine and in the UK there has been a rising trend in the incidence of Group B infection since the mid 1990s.

These diseases can kill in hours if not treated. It is important to be aware of the symptoms of meningitis and septicaemia to protect others and ourselves from this infection, because prompt treatment provides the best chance of a full recovery. The early signs of meningitis and septicaemia are non-specific and similar to those of flu and other viral infections. This makes diagnosis very difficult. However, a person with meningococcal septicaemia will get severely ill, usually very quickly.

2. Key historical evidence

Legionnaires' disease

During 2003, there were 27 cases of Legionnaires' disease in England where spa pools were identified as the source of infection, with 3 deaths. By September 2004 there had only been one case of Legionnaires' reported to be associated with a spa pool.

About half the cases occurring in the UK are associated with travel abroad; the destinations most frequently associated with Legionnaires disease are (in descending order) Spain, France, Turkey and Greece, which are popular destinations for British holidaymakers. Travel associated cases are now reported by European countries to a central reporting scheme run by the Communicable Disease Surveillance Centre in London, so that outbreaks occurring in one country but involving the citizens of several nations can be detected and acted upon as quickly as possible.

More than two thirds of the cases, which originate in the UK, are associated with urban areas particularly industrial estates, which may be due to a greater concentration of water-cooling towers in those areas. Other infections are associated with travel within the UK, and legionella infection may also be acquired in hospital, although this is now rare.

There are a number of risk factors for Legionnaires disease. The disease is commoner and/or more severe in men, cigarette smokers, and elderly patients, those with pre-existing lung disease and patients with deficient immune systems.

Meningitis

(2008-there has been an increase of cases within Thames Valley) – awaiting LH insert to this section)

Most cases are isolated events and are not linked to other cases. Local outbreaks of meningitis and septicaemia occur from time to time, but most do not last long. In recent years, outbreaks have most often been associated with Group C infection, but with the introduction of Men C vaccine, situations like this are much less frequent.

Although the risk of contracting meningitis and septicaemia is very small, infection rates are highest in children under the age of five, and there is a second rise in infections in the 15 to 24 year age group. One in ten of us, at any time, are carrying the bacteria that cause meningococcal meningitis and

septicaemia. We pass them between each other by regular, close, prolonged contact. Most of us can carry these bacteria without getting ill. But, in a very few people the bacteria overcome the body's immune defences and get into the blood stream, causing meningitis and septicaemia. Scientists do not yet fully understand why some people are more susceptible to meningococcal infection.

3. Likelihood

Hazard	Outcome description	Likelihood
Legionella/Meningitis outbreak	Localised outbreak, with up to 10 fatalities and up to 50 casualties	4

4. Impact

Summary

Hazard	Outcome description	Impact			
		Social	Health	Env	Econ
Legionella/Meningitis outbreak	Localised outbreak, with up to 10 fatalities and up to 50 casualties	2	3	1	2

Details

Impacts
Primary
Legionella bacteria are widespread in nature, mainly living in natural water systems, e.g. rivers and ponds. However, the conditions are rarely right for people to catch the disease from these sources.
Outbreaks of the illness occur from exposure to legionella growing in purpose-built systems where the water is maintained at a temperature high enough to encourage growth, e.g. cooling towers, evaporative condensers, spa pools, and hot water systems used in all sorts of premises (work and domestic).
Secondary
Most community outbreaks in the UK have been linked to installations such as cooling towers, which can spread droplets of water over a wide area. These are found as part of air-conditioning and industrial cooling systems.
Fatal cases of Legionnaires' disease have also been associated with spa pool demonstrations.
Impacts
Primary
About 4 in 100,000 people in the UK have bacterial meningitis each year. Anyone can be affected. However, children under five years, and teenagers aged 15, 16 and 17 are the most at risk from meningococcal meningitis.
Most cases of meningococcal infection are isolated cases. The risk of others

'catching' it is low as many people are carriers and/or have natural immunity. Sometimes small outbreaks occur when two or more people in the same household or community are affected.

Secondary

Rarely, meningococcus bacterium overcomes the body's immune (defence) system and gets into the blood to cause meningitis and / or septicaemia. It is not clear why a few people are prone to serious illness, and many other people are carriers of the same bacterium but have no ill effect.

Again, pneumococcus meningitis probably occurs due to a breakdown in the immune system. It most commonly occurs in people over 45 years, and in babies. Meningitis due to bacterium is not thought to be contagious.

5. Vulnerability and resilience

The Health Protection Agency (HPA) Centre for Infections (CfI) carries out a broad spectrum of work relating to prevention of infectious disease.

The remit of the Centre includes infectious disease surveillance, providing specialist and reference microbiology and microbial epidemiology, co-ordinating the investigation and cause of national and uncommon outbreaks, helping advise government on the risks posed by various infections and responding to international health alerts.

Major outbreaks, local or widespread, usually represent a significant failure of existing prevention measures. The Centre coordinates the investigation and response to national incidents and outbreaks and ensures that local incidents and outbreaks are investigated consistently across the country. Rapid and thorough microbiological and epidemiological investigations are essential for effective immediate control and to ensure the appropriate lessons are learnt for longer term prevention.

The Centre's epidemiology and public health staff are responsible for holding and updating national outbreak plans, as well as many disease-specific major incident plans, working with microbiology and clinical colleagues, Local and Regional Services and, for emergencies, with the Centre for Emergency Preparedness and Response. It also works on a national level with government departments to advise on appropriate immediate interventions, such as withdrawal or recall of an implicated food product.

In addition to natural emergencies, the Centre provides microbiology and epidemiology skills in support of detection and response to deliberate release of infectious agents and hoax or possible release.

The HPA has published spa pool guidelines since 1994 and a new joint document with the Health and Safety Executive is being produced which will update advice on risks and legislation associated with spa pools.

The Meningococcal Meningitis Guidelines have been prepared by the Advisory Group on Communicable Diseases in consultation with the Public Health Protection Unit, and conform to the UK guidelines on managing meningitis in Higher Education establishments (December 2004). Their

purpose is to outline the responsibilities of the University, the Colleges and the Public Health Protection Unit, which works on behalf of Primary Care Organisations.

With an issue as emotionally charged as meningitis, appropriate and effective communication is essential - particularly with the media. Other universities have found that a lack of communication can result in potentially dangerous misinformation. In contrast, the press and media can prove a useful tool for disseminating health and safety information quickly, for example by announcing how to get more information or how to recognise the symptoms of meningitis.

The Guidelines include important information about meningitis and its symptoms. Further information is available from the Meningitis Trust's 24-hour help line (0845 6000 800) or NHS Direct (0845 4647).

6. Mitigation and control measures

To prevent exposure to the **legionella bacteria**, organisations must comply with legislation that requires the management, maintenance and treatment of water systems in premises properly. This will include, but not be limited to, appropriate water treatment and cleaning regimes.

Remember, legionella can grow in any workplace if the conditions are right - you do not have to work with microbiological agents, eg in a laboratory, for exposure to occur. HSE's Approved Code of Practice (ACoP) and Guidance "Legionnaires' disease: The control of legionella bacteria in water systems" concerns assessing the risk of employees and others in the workplace of contracting Legionnaires' disease.

Copies of L8 can be purchased from the Health and Safety Executive. The HSE also publishes several free leaflets and a video explaining legal duties and the control of legionella in cooling systems and hot/cold water systems available from HSE Books.

Separate regulations (The Notification of Cooling Towers and Evaporative Condensers Regulations 1992) require the notification of cooling towers to the local authorities.

Immunisation

Children are routinely immunised against certain causes of **meningitis**. These include Haemophilus influenza type B (HIB), Group C meningococcus and mumps. Other vaccines may be used for travellers going to meningitis prone countries. Vaccines are not yet available for other causes of meningitis, in particular, Group B meningococcus. See separate leaflets called '*Meningococcal Immunisation*' and '*Immunisation Against Group C Meningococcal Infection*'.

Contacts

Close contacts of a person with meningococcal infection have an increased

risk of developing the illness. However, the risk is still low. Close contacts usually means household members, or intimate kissing contacts within the previous seven days. These people are offered a short course of antibiotics to prevent possible infection.

If Group C meningococcus is the cause, then immunisation is also offered to close contacts. Occasionally, an outbreak of two or more cases of meningococcal infection occurs in the same school, college, or similar community. Antibiotics and/or immunisation may then be offered to a wider group of people.

7. Overall assessment

Category	Sub-category		
Human health	Legionella/meningitis outbreak		
Outcome description	Impact	Likelihood	Risk
Localised outbreak, with up to 10 fatalities and up to 50 casualties	3	4	HIGH

Controls in place

Buckinghamshire, Milton Keynes Health Protection Team and & Local/Unitary Authorities in Buckinghamshire - Legionella Outbreak Plan

Buckinghamshire, Milton Keynes Health Protection Team and & Local/Unitary Authorities in Buckinghamshire - Meningococcal Meningitis Plan

Milton Keynes Council Major Incident Guide

Royal Berkshire Hospital NHS Trust Major Incident Plan

Heatherwood and Wexham Park Hospitals NHS Trust Major Incident Plan

Berkshire Primary Care Organisations Major Incident Plan and Operational Response Manuals

Berkshire Healthcare Trust Major Incident Plan

Buckinghamshire Hospitals NHS Trust Major Incident Plan

Milton Keynes Hospital NHS Trust Major Incident Plan

Buckinghamshire Mental Health Trust Major Incident Plan

Buckinghamshire Primary Care Organisations Major Incident Plan

Oxford Radcliffe Hospitals NHS Trust Major Incident Plan

Oxford Mental Health Trust Major Incident Plan

Nuffield Orthopaedic Clinic Major Incident Plan

Oxfordshire Primary Care Organisations Major Incident Plan

South Central Strategic Health Authority Major Incident Plan

Berkshire Integrated Emergency Planning Structure

Wokingham District Council Emergency Plan

Reading Borough Council Emergency Plan

West Berkshire Council Emergency Plan

Bracknell Forest Borough Council Emergency Plan

Royal Borough Council of Windsor and Maidenhead Emergency Plan

Slough Borough Council Emergency Plan

Buckinghamshire County Council Emergency Plan.

Aylesbury Vale District Council Emergency Plan.

Chiltern District Council Emergency Plan.

South Bucks District Council Emergency Plan.

Wycombe District Council Emergency Plan.

Oxfordshire County Council Emergency Plan

Environment Agency Incident Management Plans

Environment Agency 24/7 Incident Response

South Central Ambulance Service NHS Trust Major Incident Plan

Thames Valley Police Emergency Procedures Manual

ACPO Emergency Procedures Manual

Additional risk treatment required