National Association of Re-enactment Societies

Guidance note – risk assessment of zoonosis in re-enactment

APPLICATION OF THE REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATION 1985 (RIDDOR).

These regulations are continuously under review.

Foreword

The zoonosis are infections that are transmitted from animals to humans. Many of these infectious diseases may be contracted in the re-enactment environment. However, the incidence of the zoonosis in the UK is not know. We know that anthrax and brucellosis are now rare and rabies has not occurred for many years. For other infections, such as Lyme disease and the cattle form of leptospirosis, we have no adequate incidence data. The Health & Safety Executive is commissioning research projects to answer these questions. Although some of the better known infections are rare, members of HSE's field force are regularly asked for help with risk assessments especially following the implementation of the COSHH Regulations. This guidance has been prepared with COSHH in mind and attempts to give advise useful for both assessment and control.

REGULATIONS (COSHH & RIDDOR)

APPLICATION OF THE CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS (COSHH)

Micro-organisms which are hazardous to human health are included as substances hazardous to health in the COSHH Regulations.

Assessment

All members, groups and individuals should consider whether the animals or animal products they handle are associated with any of the occupational zoonotic diseases that occur in the UK. If only a restricted range of animals is handled then the number of possible will be limited. E.g. if no pigs and birds are handled then the known infections associated with these animals (e.g. Streptococcus suis and psittacosisiornithosis) can be discounted.

Zoonosis associated with all facets of 'living history'. Information concerning other zoonosis will be available from trade and professional publications and organisations, and veterinary advisers.

Assessment of risk

Whether there is a risk of an individual zoonotic disease depends very much on the current incidence of that disease in the UK. Risk for individual activities must consider the incidence of infection in the animal reservoir, the route of transmission, the infectivity of the organism, the vulnerability of the individual, the severity of the disease and the controls in use. The possible infection of imported animals and animal products should be considered.

Incidence of infection in the animal reservoir

An assessment of the likely presence of a reservoir of infection should consider the incidence in animal species in the country as a whole and any information available about the possible extent of infection in the group of animals, (e.g. the herd, flock) or environment (canal, woodland) under consideration. (recommended reading – Farming publications or contact NFU)

Dairy and meat animals have been subject to control regimes designed to eliminate or reduce some of the more important zoonotic infections, although sometimes diseases are endemic and cannot be eliminated. However, it should be known if the potential animal hosts have been subject to a vaccination programme, have come from an accredited disease-free herd or have had veterinary inspection.

Route of transmission

An assessment of the risk of an infection being transmitted to a member depends on an examination of the activity and a knowledge of the route of transmission for that particular micro-organism.

Risks to an individual

The risks to an individual depend on the infectivity of the organism, dose of the organism, route of entry into the body and any special factors affecting the individual's susceptibility, e.g. people on antibiotics may be at a greater risk of infection from antibiotic resistant salmonella, and those with heart valve disease may be more likely to get chronic Q fever. The infectivity is a characteristic of the organism. The minimum dose required for infection varies between organisms, depends on route of entry into the body and for some organisms may not be known. No quantative microbiological standards have been proposed and air sampling does not have a role to play in the routine assessment of risk or subsequent monitoring. Wounds and skin abrasions can increase risk of infection but this can be minimised by adequate use of suitable dressings and close attention to personal hygiene. An individual's immune status can be enhanced by immunisation or depressed by disease or drug therapy.

Severity of disease

Some zoonotic infections are more serious than others – some can be fatal, others short term and self-limiting. Equally, some are more amenable than others to treatment and some may leave lasting ill health. Hence the severity of a particular disease should be taken into account, clearly, if there is a risk of a fatal outcome, then precautions should be taken.

Prevention and Control

Ideally, prevention is best obtained by eradication of the disease from the animal reservoir. This has been virtually achieved for the brucellosis and bovine tuberculosis in the UK. Some other zoonosis such as anthrax and rabies have been tightly controlled and the rare cases that do occur are notified and investigated. The precautions for the control of these diseases are well established. Other zoonotic infections such as leptospirosis may well be impossible to eradicate from their wild animal reservoirs. For those zoonosis where there are limited epidemiological data it may be difficult to assess the real risk. In the meantime, measures to prevent or control exposure are likely to consist of a mix of general and personal hygiene and environmental measures indicated for the particular micro-organism. The general measures may be no more than attention to good housekeeping and hygiene practices. Immunisation is only available for humans for a limited number of the zoonosis described here.

Health Surveillance

Regulation 11 of COSHH requires the establishment of health surveillance where there is a reasonable likelihood that an identifiable disease may arise from occupational exposure and for which there are valid detection techniques. The COSHH General Approved Code of Practice sets out the range of health surveillance measures that might be appropriate. But, whatever the circumstances, societies should at least make enquiries about symptoms and review sickness records and occupational histories.

Whenever an assessment shows a significant risk to health, the following steps should be taken:

1. Each individual should be given information as to the nature of the health hazard.
2. A health record should be established and maintained.
3. On first enrolment the present health status and the existence of significant past illness should be elicited.
4. The information should be periodically updated.
5. A medical contact card should be provided for any doctor investigating or treating any unexplained illness.

Information for Re-enactors

Societies should be informed of the health risks from micro-organisms, the symptoms that may indicate infection and the precautions that should be taken (regulation 12 of COSHH). Contact information indicating the nature of the activity and hence the possibility of zoonotic infection should be issued to individuals where appropriate.

Duties towards non-employees

As well as assessing the likely effects of zoonotic diseases on employees and or members, groups will need to decide whether other people may also be affected and what precautions are necessary to protect them. This is particularly important where members of the public are likely to be on the premises.

Listed below are two occupational zoonosis diseases which are most relevant to re-enactment

LEPTOSPIROSIS (Weil's Disease)

A potentially life-threatening illness caused by bacteria passed from rats via urine. The organism is 'Leprospira icterohaemorrhagiae'. Approximately 50 cases a year are reported to PHLS.

Name: Leptosporosis, Weil's Disease, haemorrhagic Jaundice.

Organism L. icterhaemorrhagiae ACDP Hazard group 2

Hazard to Humans – Weil's disease is serious, fatal in up to 20% of cases. It starts as a feverish illness with high temperature and headache. Symptoms may include vomiting and muscle pains. Jaundice may be present but often does not occur in the early stages. Haemorrhages may occur in the conjunctivita or elsewhere (eyes or any orifice) Meningitis is common in this disease, pneumonia and kidney failure may follow. It is much more readily treatable (with antibiotics) if diagnosed in the early stages.

Transmission.
Weil's disease may occur in any situation where there is contact with rats' urine. It may enter the human body through abrasions or cuts in the skin and through the lining of the nose, mouth, and eyes. The organism can survive for considerable periods outside the host.

Occupations
Farmers, farm workers, fish farmers, construction workers, water industry workers, leisure industry workers, sewer workers, laboratory workers and re-enactors (Higher risk Living History)

Activities
1. Work directly connected with rats or rats urine.

2. Contact with water contaminated with rats urine. This is mainly static or slow-flowing rivers.
3. Contact with feed stuffs or other material contaminated by rat urine in storage areas.
4. Canoeing instruction in ponds, lakes and slow flowing rivers; it is recommended that instruction in Eskimo rolls which involve submersion should be done in swimming baths or other clean water to avoid inhalation and ingestion of infected water. Some rivers are known to be heavily contaminated.
5. Sewer work was in the past a major source of Weil's disease. However, rat control and provision of protective clothing and instruction has greatly reduced the numbers affected.
6. Fish farming, rats may contaminate food stuffs and also the water in which the fish are, and fish workers often immerse hands in the tanks or ponds.
7. Laboratory work dealing with infected blood or urine. Laboratory rats are free from this disease.
8. Re-enactment Societies

Control of exposure
1. Do not handle rats dead or alive without adequate protection for the hands.
2. Personal protective equipment when other controls are not reasonable practicable include gloves and waterproof suits.
3. All staff should have adequate information and training. A warning card should be provided to all.
4. All staff should have access to good hygiene and washing facilities, and facilities for covering cuts and abrasions, when at work with waterproof plasters.
5. Avoid canoe training in potentially infected waters.
6. Where practicable drain wet ground to get rid of reservoir of infection.
7. Living History next to lakes, canals, rivers, brooks and ponds.

Health Surveillance
Early reporting and treatment of any infection is paramount. Employees should be issued with medical contact cards and told to produce these to their GP's or Occupational Health physicians.
Clinical diagnosis
Blood may be sent to the local PHLS for serology and they may refer it to the Leptospirosis Reference Unit at Hereford.

Immunisation
Not available in the UK
Legislation
It is notifiable under Public Health regulations, reportable under RIDDOR to HSE and is a prescribed Industrial Disease for Industrial Injuries Benefit. It is therefore essential that any sufferer obtains a medical certificate with the diagnosis.

LYME DISEASE

Lyme disease is a 'tick' borne infection caused by a newly recognized bacterium. 'Borrelia burgdorferi'. It starts clinically with a characteristic early and expanding skin lesion, which may be followed weeks to months later by neurological, cardiac or joint abnormalities. Symptoms may be related to any of these four systems alone or in a combination. The reservoir in the UK is probably deer, and those occupationally at risk are those likely to receive 'tick bites', i.e.: forestry and agricultural workers.

Name: Lyme Disease, Lyme Arthritis, Erythema, Chronicum Migrans (ECM), tick borne Meningopolyneuritis. The name originates from Lyme, Connecticut USA, where and unusual clustering of Arthritis was identified in 1975

Organism Borrelia Burgdorferi ADCP Hazard Group 2
Transmitted by the tick 'Ixodes Ricinus'

Reservoirs
Probably deer and wild rodents.
Incidence
Five hundred cases reported in the UK since 1985. Surveys show occurrence in certain occupational groups such as foresters
Hazard to Humans
The illness usually begins with the skin lesion, and expanding erythematous ring around the site of the tick bite, erythema chronicum migrans. This is often associated with intermittent flu-like symptoms. This stage lasts a few weeks. Weeks to months later, cardiac, arthritic and/or neurological manifestations may also develop.
Transmissions
This occurs by the bite of an infected 'tick'. In their active phase the ticks are located in ground vegetation, often on vegetation tips waiting for a host to pass.
Occupations
Any worker exposed to tick bites in agriculture, forestry or leisure land management. Especially those working in woodland and grassland areas harbouring ticks.
CONTROL
Prevention and control of exposure
Avoidance of exposure to ticks by covering exposed skin, especially legs e.g.: closure of trouser bottoms. Inspection of clothing when working in woodland or on moorland and heath. Self-inspection of skin for ticks. Inspection of working dogs. Promote awareness of the hazard and understanding the need to avoid skin exposure when working in woodland or long grass. The CSOHS has provided guidance for employees in the public sector, devised with the Forestry Commission (HSM23(Revised)November 1989)

Clinical Diagnosis
Erythema chronicum migrans is a unique clinical marker for the early stage of Lyme Disease. However, this may not necessarily be present and the early flu-like symptoms may be misleading. The later stages involving the heart, nervous system and joints may mimic a range of disorders.
For serological diagnosis refer to your local PHLS laboratory or reference laboratories at PHLS Hereford or PHLS Southampton or Dr D Wright at Charing Cross Medical School. Diagnosis by culture of the organism is uncertain especially during later stages of the disease.
Treatment
Tetracyclines or penicillin.
Legislation
On the evidence then available the Industrial Injuries Advisory Council did not recommend prescription in October 1989.

ZOONOSIS FOUND ON CAMPSITES.

Campylobacter
Symptoms: diarrhoea, often blood stained
Colicky abdominal pain, con mimic appendicitis
Duration: 1 to 11 days but normally 2 to 5 days.
How caught: Ingestion or handling of contaminated food or water.
Source: Commonly caught from poultry but largely unknown.

Salmonella.
Symptoms: Diarrhoea, abdominal pain, vomiting and fever.
Duration: 12 to 72 hours.
How caught: ingestion of contaminated food or water.
Source: Mammals (sheep, cattle and pigs), birds, reptiles and fish.

E.coli 0157
Symptoms: diarrhoea can be bloody, may result in death.
Duration: 12 hours to 6 days
How caught: Ingestion of contaminated food or water or by faecal oral route.
Source: Cattle, sheep and goats.

Cryptosoridium
Symptoms: Watery or mucusy diarrhoea, nausea, vomiting and abdominal pain.
Duration: 2 to 5 days
How caught: contaminated water, animal contact and faecal oral route.
Source: Cattle and sheep.

Bovine Tuberculosis
Symptoms: Similar to chest infection but worse
How caught: by drinking unpasturised milk.
Source: Cattle

Brucellosis
Symptoms: Can result in miscarriage or premature birth
How caught: unpasturised milk, or contact with infected cattle.
Source: Cattle.

Anthrax
Symptoms: Nose bleeds and bleeding anus. At post mortem symptoms can include
Failure of the blood to clot, no rigor mortis and an enlarged spleen.
How caught: contact or handling of contaminated animals or carcasses.
Source: Horses, pigs, cattle, sheep (any farm or wild animal)

Rabies (The UK is free of this disease at present)
How caught: from the bite of an infected animal
Source: any animal

Hantavirus Disease
Symptoms: Kidney problems
How caught: contact with rodent urine and saliva.
Source: wild rodents (rats, mice, voles etc.).

Hyatid Disease. Caused by tapeworm.
Symptoms: cysts (fluid filled sac) inside the liver, accidental intermediate host.
How caught: faecal oral.
Source: dogs, foxes and sheep.

Leptospirosis
Symptoms: starts with flu like symptoms.
How caught: contact with infected water.
Source: predominantly the brown rat.

Listeriosis
Symptoms: range from mild flu-like illness to severe life threatening infections.
High risk group is pregnant women where abortion can occur, the Elderly the immunocompromised.
How caught: eating affected foods and contact with infected animals
Source: Cattle and sheep.

Lyme Disease
Symptoms: skin, joint and nerve problems
How caught: from the bit of the hard bodied tick. Source: Wildlife

Orf
Symptoms: pustular dermatitis
How caught: direct contact with infected animals.
Source: Sheep

Pasteurellosis
Symptoms: painful swelling of the skin (cellulitis)
How caught: animal bite or scratch.
Source: pets and livestock.

Chlamydia
Symptoms: can cause respiratory infection, pregnant women are at risk.
How caught: handling infected animals.
Source: sheep, turkeys, ducks and geese.

Q Fever
How caught: direct contact with infected animals or inhalation of contaminated aerosols.
Source: sheep, cattle, goats and other ruminant animals.

Ringworm
Symptoms: round crusty ring on skin.
How caught: contact with fungus which causes infection.
Source: farm animal, particularly cattle but can occur in horses cats and dogs.

Toxocariasis
Symptoms: lung infection, chronic abdominal pain and skin rash. Loss of vision.
How caught: ingestion of eggs.
Source: soil, cats, dogs.

Toxoplasmosis
Symptoms: mildly flu-like during pregnancy can cause abortion or birth defects.
How caught: eating undercooked meat contaminated with cat faeces or handling cat
Litter (used).

Trichinosis
Source: Pigs

Yersiniosis
Symptoms: watery diarrhoea, abdominal pain, fever and arthritis.
Duration: 3 to 7 days
How caught: ingestion of contaminated food.
Source: Livestock

LISTED BELOW ARE OCCUPATIONAL ZOONOSIS DISEASES AS IN GOVERNMENT PUBLICATIONS

ANTHRAX:
Hazard: potentially fatal.
Incidence: rare (one proven case notified in UK during past ten years.

BOVINE TUBERCULOSIS:
Hazard: potentially severe chronic bacterial disease that was usually acquired by drinking raw milk from cows infected with Mycobacterium bovis. It can be acquired occupationally by those handling infected animals and their tissues.
Incidence: Not known.
Legislation: Notifiable under the Public Health Regulations and under RIDDOR to HSE. It is a prescribed Industrial Disease. It is a subject of animal health legislation, contact the local Divisional Veterinary Officer for current situation.

BRUCELLOSIS:
Hazard: A potentially severe bacterial disease that was usually acquired from drinking raw milk from cows infected with Brucella abortus. It can be aquired occupationally by those handling infected animals and their tissues. The infection which causes abortion and infertility in cattle has now been virtually eradicated in the UK.
Incidence: The recorded number of human cases fell from 600 per year in the early 1970's to 7 per year in 1984.
Legislation: Brucellosis is a Prescribed Disease (PD.B7). It is subject to animal health legislation, contact the local Divisional Veterinary Officer for the current situation.

CRYPTOSPORIDIOSIS:
Hazard: Normally a self-limiting diarrhoeal illness in otherwise health people, but life threatening in individuals with a deficiency of the immune system. The causative organism is the protozoan Cryptosporidium parvum which is present in the faeces of many animal species, but the main occupational hazard to humans is from calves.
Incidence: Laboratory reports of Cryptosporidiosis infection more than doubled between 1988 and 1989. This probably reflects greater awareness of the organism. 9,147 cases were reported in the UK in 1989 representing about 9% of all diagnosed cases of diarrhoeal illness and suggesting that the organism is the fourth most common cause of acute diarrhoea.
Legislation: none. The Department of Health is considering making the disease reportable under proposed new legislation.

HANTAVIRUS DISEASE:
Hazard: An acute viral disease capable of progressing to renal failure, transmitted from field and laboratory rodents.

Incidence: Subclinical infection is much more common than clinical disease. However, high seropositivity rates can occur in various occupational groups.
Legislation: none relevant.

HYDATID DISEASE (ECCHINOCOCCOSIS)
Hazard: The cystic stage of the canine tapeworm developing in humans causes tissue damage and symptoms when the cyst reaches a sufficient size. The majority of cysts develop in the liver with the lung being the second most common site. Humans are infected through intimate contact with infected dogs or a contaminated environment.
Incidence: Incidence is low in the UK and declining with improved hygiene but 177 occupationally acquired infections in England and Wales were reported to CDSC from 1978 to 1989. Some 20 new cases currently occur each year, half from Welsh farming areas.
Legislation: Not notifiable in the UK. It was accepted as a Prescribed disease in 1991 (PD.B13). A forthcoming EC Directive is likely to require sterilisation or other safe treatment of offal wastes.

NEWCASTLE DISEASE
Hazard: None life-threatening conjunctivitis, fever and flu-like symptoms caused by virus spread via aerosols from infected birds.
Incidence: Rare in UK, occasional outbreaks in import quarantines.
Legislation: The disease is not notifiable in the UK for humans, but is for poultry. As it is subject to animal health legislation, contact the local Divisional Veterinary Officer for
current information.

ORF:
Hazard: Orf has been recognised as a disease of sheep and goats for 100 years although it has only been diagnosed in people in the UK from 1934. In humans there is usually a single red primary lesion on the hand or forearm lasting three to six weeks. It is caused by a pox virus.
Incidence: Approx 50 cases per year with two peaks of seasonal evidence, the first peaking in May (coinciding with lambing) with males and females being equally affected, and the second being in autumn (coinciding with slaughtering/marketing) with mainly males affected.
Legislation: It is not a notifiable disease, but was accepted as a Prescribed Industrial Disease in March 1991 (PD.B12).

OVINE CHLAMYDIOSIS (ENZOOTIC ABORTION)
Hazard: The ovine strain of Chlamydia psittaci has been shown to cause abortion in pregnant women handling infected sheep.
Incidence: Section on psittacosis as it is difficult to distinguish the strain responsible for mild infections.
Legislation: The disease is not notifiable in the UK. It is a prescribed Industrial Disease. It is subject to animal health legislation, contact the local Divisional Veterinary Officer for current information.

PSITTACOSIS (ORNITHOSIS)
Hazard: This is a disease aquired by contact with infected birds. The disease

varies from a flu-like illness to an atypical pneumonia with the possible involvement of other major organs. The organism is Chlamydia psittaci.

Incidence: The number of cases in the UK is increasing, e.g. from 157 in 1978 to 532 in 1988, this may be as a result of increasing laboratory diagnosis. This increase corresponds to a parallel increase of diagnosis of the disease in Veterinary Investigation Centres. 2561 cases were reported during 1975 – 1984 in England and Wales. 1230 cases in Scotland between 1967 – 1987. Few of these patients can rule out contact with birds; or cattle or sheep, see ovine strain). About one third of the cases report a definite history of exposure to birds, about one tenth with sheep. Most avian (bird) contact is associated with pet birds. Outbreaks from poultry have remained at a lower level. Particular outbreaks have involved ducks and been concentrated in Wiltshire, Lancashire and Norfolk. However, isolated cases occur everywhere.
Legislation: The disease is not notifiable in the UK with respect to humans, but is for infection of poultry. It is a Prescribed Industrial Disease. The quarantine of imported birds is compulsory. Subject to animal health legislation, contact local Divisional Veterinary officer for current situation.

Q FEVER
Hazard: Q fever was first described in Australian abattoir workers; the Q (query) referring to its unknown nature. It is now known to be due to the organism Coxiella burnetti. It presents as a flu-like illness often giving rise to an atypical pneumonia.
Incidence: Scotland 1989, 31, England and Wales 1989, 154. Gross underreporting is due to relatively mild symptoms, lack of awareness, under diagnosis and no legal obligation to report. Endemic in animals in some areas.
Legislation: It is not a notifiable disease (for humans) in England and Wales, or Scotland, although recently a voluntary reporting system has been started in Scotland. Also, in 1989 it was made a Prescribed Industrial Disease.
It is not a notifiable animal disease and there is no eradication policy.

RABIES
Hazard: An almost invariably fatal, acute infection of the central nervous system resulting from a bite of a rabid animal.
Incidence: The only reported cases in the UK during the last 60 years (animal or human) are those that have been contracted abroad.
Legislation: Notifiable under the Public Health (Infectious Disease) Regulations 1968. Subject to animal health legislation, contact the local Divisional Veterinary Officer for current situation.

RINGWORM
Hazard: Ringworm is a non-life threatening fungal infection of the skin resulting in round, crusty lesions, Transmission is usually by direct skin to skin contact. The normal source of infection on the farm is bovine animals.
Legislation: It is not a notifiable animal disease and there is no eradication policy.

STREPTOCOCCUS SUIS
A bacterial infection acquired from pigs which occasionally may give rise to a severe possibly fatal meningitis.
Incidence: First case diagnosed in humans in 1968, since then around 100 worldwide (chiefly Denmark, Netherlands and UK). One or two cases reported in UK on average.
Legislation: A prescribed industrial disease.

LIST OF ANIMALS REFERRED TO IN THE TEXT

Badgers, Birds, Cattle, Deer, Dogs, Ducks, Field Mice, Foxes, Goats, Horses, Pigs, Poultry, Rats, Sheep, Ticks, Voles, Wild rodents

Lymes Disease and Weil's Disease are possibly the two most important to be aware of in re-enactment. A full summary of these has been circulated

The Health & Safety sub-committee recommend that member groups look at HSE web site http://www.open.gov.uk/hse/hsehome.htm

NAReS guidance notes are based on what is believed to be current good practice. They are not intended to be exhaustive in their content and are open to revision.

These notes are intended for guidance only and should not be construed as being mandatory, or applying to all circumstances which may arise. They are designed to work in conjunction with any member groups' own rules, regulations or recommendations.

NAReS cannot be held responsible for the actions of other official bodies, or for the imposition or effect of any legislation/regulation of which it was unaware at the date of issue of this guidance note.