



Guidelines for the Investigation of Zoonotic Disease (England and Wales)

April 2009

May 2014: Please note that this document is currently being revised due to major changes in organisational structures in several of the partner agencies.

However, in the interim it can still be followed as the principles of managing incidents remain unchanged.

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1 Introduction

Zoonoses are infections naturally transmissible between vertebrate animal hosts and humans. Transmission may occur in a number of settings, ranging from indirect contact through food or drinking water to direct occupational exposure on farms, during leisure pursuits or from pets. Detailed information on specific zoonoses is available on the Health Protection Agency (www.hpa.org.uk) and Defra (www.defra.gov.uk) websites.

This document seeks to clarify the roles and responsibilities of different organisations with respect to zoonotic incidents and outlines how they should best work together in different situations, for example through routine information reporting, formal liaison and outbreak investigations, to ensure a common approach. It is intended for all those likely to be involved in the management of zoonotic incidents in England, including Health Protection Units (HPUs), local authorities (LAs), Primary Care Trusts (PCTs), the Veterinary Laboratories Agency (VLA), Animal Health, the Health and Safety Executive (HSE), private veterinary surgeons and private veterinary laboratories. In Wales, the equivalent organisations to the HPUs are Health Protection Teams (HPTs), and Local Health Boards (LHBs) have similar roles to PCTs. Separate arrangements exist for Scotland and Northern Ireland (for contact details see section 8). Where cross-border incidents occur these should be managed in collaboration with appropriate agencies, however different agencies have different borders even within a single nation (see appendices 6-8).

Figures 1 and 2 show suggested lines of communication for zoonotic disease in animals and humans. The investigation of food-borne outbreaks/incidents, such as salmonellosis, is well covered elsewhere (for example the Zoonoses Order 1989, and the Food Standards Agency (FSA) guidance on the management of outbreaks of foodborne illness www.food.gov.uk/foodindustry/guidancenotes/hygguid/outbreakmanagement), and is therefore excluded from this guidance. However, the potential for direct transmission of enteric diseases caused by organisms such as *Salmonella*, verocytotoxigenic *E coli* (VTEC) O157 and *Cryptosporidium* from animals should be considered in outbreaks and therefore such situations are included here.

Animal Health (previously the State Veterinary Service) has well established procedures for dealing with statutorily¹ notifiable² zoonotic diseases of animals, such as anthrax, rabies, avian influenza, bovine tuberculosis and brucellosis, and information on many of these is available on the Defra website (www.defra.gov.uk). As specified in Defra's Contingency Plan for Exotic Animal Diseases (<https://www.gov.uk/government/publications/contingency-plan-for-exotic-notifiable-diseases-of-animals>). Animal Health takes the lead in the operational aspects of containing and controlling an outbreak of an exotic animal disease. The VLA is generally the first point of contact for salmonella and non-statutory zoonoses (including so-called "orphan zoonoses"). The VLA has accepted procedures for dealing with some of these, for example VTEC O157 and cryptosporidium outbreaks linked to direct animal contact.

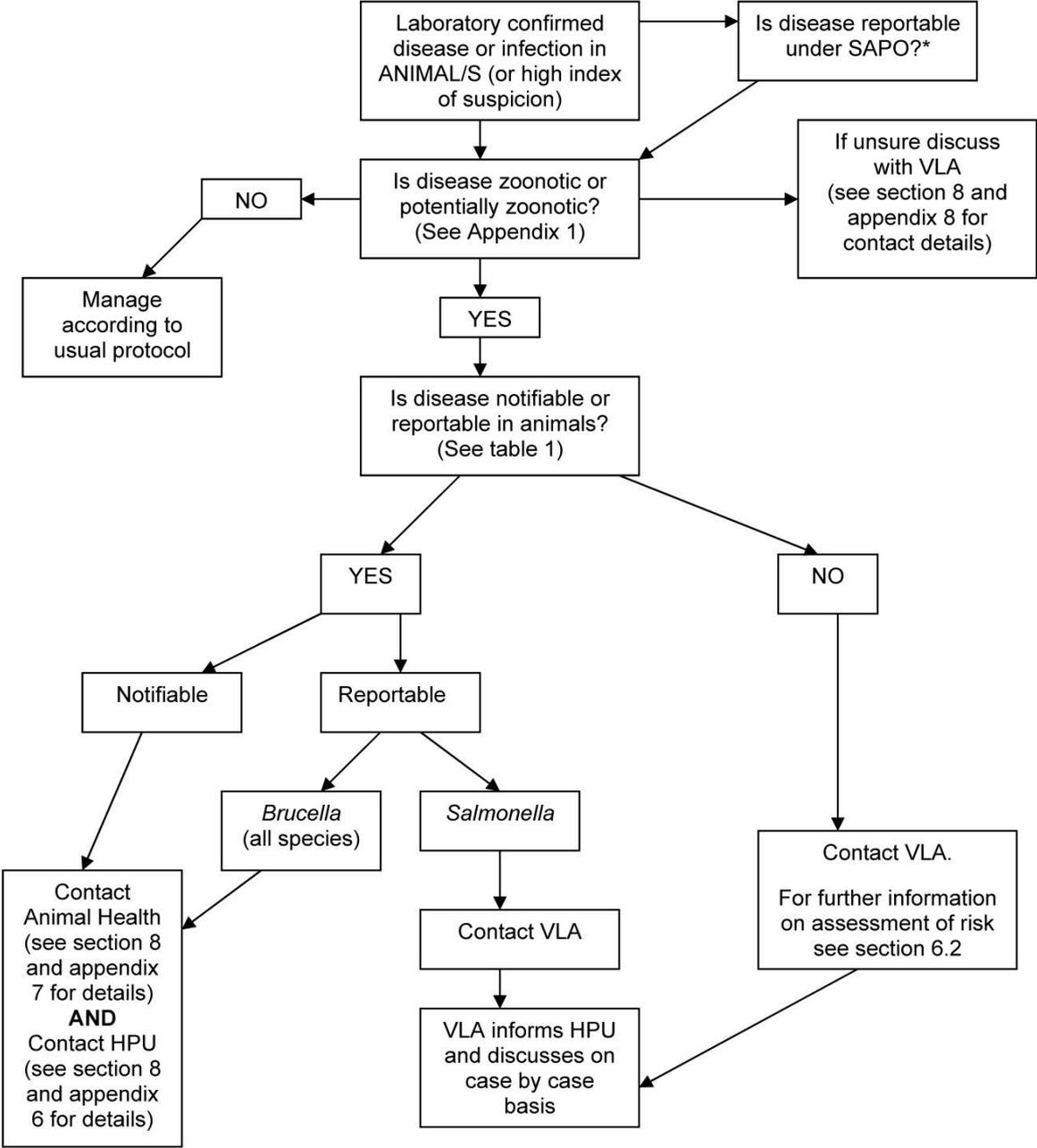
This document is intended to provide a broad overview of the investigation of zoonotic incidents, however it does not deal with specific diseases and where disease specific protocols exist these should be followed.

This guidance is also intended to be consistent with and supportive of generic plans in Wales for the investigation and control of infectious diseases, such as the Wales Framework for Managing Major Infectious Disease Emergencies (in draft format as of March 2009).

¹ Required by law

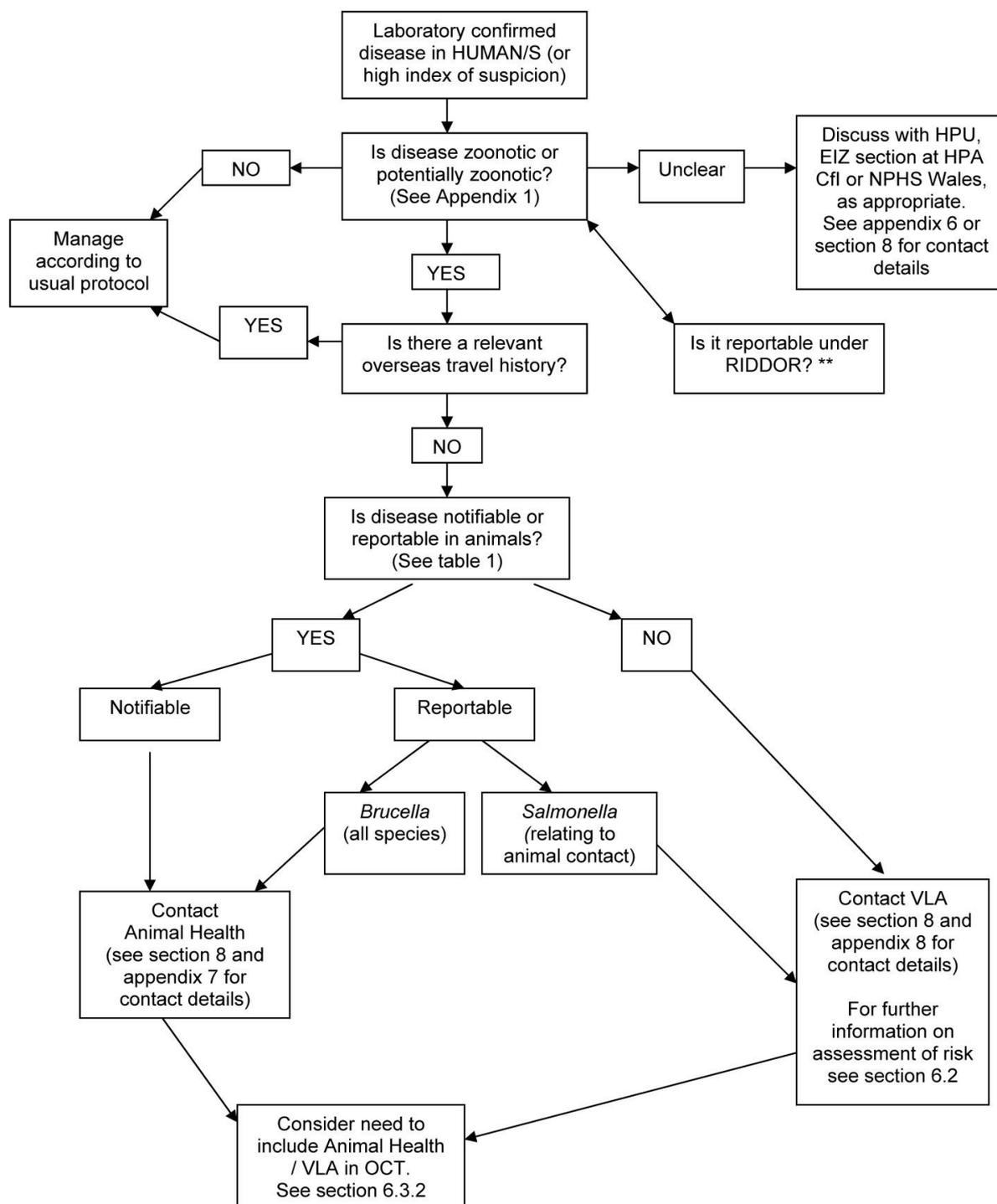
² Legal requirement to notify disease made on the basis of clinical suspicion of disease in human or animal

Figure 1: Communication flowchart for zoonotic disease in animals



* If reportable under SAPO (Specified Animal Pathogens Order) 2008, inform Animal Health and HSE immediately

Figure 2: Communication flowchart for zoonotic disease acquired directly from animals in humans*



* Excludes foodborne

** If reportable under RIDDOR, contact HSE <http://www.hse.gov.uk/riddor/>
For details of reportable incidents visit <http://www.hse.gov.uk/riddor/guidance.htm>

2 Structures, Roles and Responsibilities of involved agencies/organisations

2.1 Health Protection Agency (HPA)

www.hpa.org.uk/

The HPA is an independent public body established in 2003 to provide an integrated approach to protecting UK public health through the provision of support and advice to the NHS, LAs, emergency services, the Department of Health (DH), and the Devolved Administrations. Although the HPA does not have statutory powers to enforce legislation it works closely to support other agencies that do, such as LAs and the FSA.

The HPA comprises three specialist centres [the Centre for Infections (CfI) Colindale, the Centre for Emergency Preparedness and Response (CEPR) Porton Down, and the Centre for Radiation, Chemical and Environmental Hazards (CRCE) at Chilton], a network of laboratories (the Regional Microbiology Network), and Local and Regional Services (LaRS). Specialist and reference laboratory function is provided by a number of reference laboratories located mainly in CfI, and in the Regional Microbiology Network (RMN).

The Emerging Infections and Zoonoses (EIZ) Section at CfI undertakes a range of activities including horizon scanning and assessment of infectious disease threats, coordinating zoonoses activities across the HPA, providing support for zoonoses surveillance undertaken by the National Public Health Service (NPHS) Wales, and providing medical and health protection advice. The section works closely with veterinary colleagues on the assessment, management and control of zoonoses.

The Regional Microbiology Network (RMN) is composed of eight Regional Microbiology Laboratories. In addition, 37 hospital microbiology laboratories participate as HPA Collaborating Laboratories. Together, these laboratories provide frontline diagnostic and public health microbiology services to NHS Trusts, HPA Health Protection Units and LAs.

Local and Regional Services (LaRS) often provide the HPA contact point for other agencies. In England there are 26 HPUs representing the local face of the HPA (see appendix 6). These are staffed by Consultants in Communicable Disease Control (CsCDC) also referred to as Consultants in Health Protection (CHP), health protection nurses and practitioners who work directly with PCTs, acute hospital trusts, and LAs in their area to deliver local health protection.

Each HPU is supported by one of nine regional offices covering the whole of England each with a director, regional management team, and specialists in epidemiology, microbiology, and emergency planning. The regional teams coordinate the activities of HPUs in their area and assist local Regional Directors of Public Health in managing the response to major incidents.

2.2 National Public Health Service Wales (NPHS)

<http://www.nphs.wales.nhs.uk/>

The National Public Health Service for Wales provides health protection services for the people of Wales. These are provided by an all Wales Health Protection Team working from locations in North Wales, Mid and West Wales, and South East Wales. The Communicable Disease Surveillance Centre (CDSC), the epidemiological arm of NPHS, is responsible for surveillance of infectious disease, provision of health intelligence and applied research. CDSC also provides the zoonoses surveillance reference function for England and Wales in collaboration with HPA CfI and works closely with eight microbiology laboratories which provide the laboratory, clinical and scientific support underpinning the diagnosis and

management of communicable disease. HPTs take the lead in outbreak investigations, with support from CDSC and the microbiological services. In addition NPHS provides the following services:

- Emergency Planning and Response
- Health and Social Care Quality
- Health Intelligence
- Communicable Disease Programmes which cut across other health protection activities and other NPHS components and involve partners throughout the NHS and the wider public sector.

2.3 Department for Environment, Food and Rural Affairs (Defra)

<http://www.defra.gov.uk/>

Defra has a wide-ranging remit including the environment, rural economy, farming, and food provision. The focus on healthy environment and thriving farming and food sector includes reducing the risks of animal diseases, and being ready to control them when they occur. The broad area of disease surveillance and control includes zoonotic diseases. Policy on these areas is developed by the core Department and delivered through Defra's delivery agencies; Animal Health (described under 2.4) and the VLA (see 2.5).

2.4 Animal Health

<http://www.defra.gov.uk/animalhealth/about-us/index.htm>

Animal Health (formerly the State Veterinary Service) is an executive agency of Defra, and works on behalf of Defra, the Scottish Government, and the Welsh Assembly Government. Animal Health's primary responsibility is to ensure that farmed animals across Great Britain are healthy, disease free, and well looked after. This remit includes animal health, veterinary public health, animal welfare and international trade issues. It operates via a network of 24 Divisional Offices, each led by a Divisional Veterinary Manager (DVM). Each office consists of Veterinary Officers, Animal Health Officers, administrative staff and, in some cases, specialist inspectors. Animal Health implements government animal health and welfare policies on farms, at livestock markets and during transport throughout Great Britain.

Animal Health's zoonotic remit only relates to statutorily notifiable and reportable animal diseases. This includes:

- Maintaining readiness to manage outbreaks of notifiable animal disease
- Preventing, controlling, and/or eradicating notifiable animal diseases

Animal Health staff liaise with farmers, local authorities, private veterinary surgeons, market operators, transporters, slaughterhouses and many other groups, as well as the general public.

2.5 Veterinary Laboratories Agency (VLA)

<http://www.defra.gov.uk/corporate/vla/default.htm>

The VLA is an executive agency of Defra. It provides animal disease surveillance and diagnostic services in England and Wales, and undertakes veterinary scientific research. It is the national and international reference laboratory for a wide range of animal diseases. There is a large central facility near Weybridge in Surrey plus a network of 15 regional veterinary laboratories, and surveillance centres at the Liverpool and London Veterinary Schools. Regional laboratories are managed by regional veterinary managers (RVMs).

The VLA receives animal carcasses and other diagnostic material (predominantly from farm animals) submitted by private veterinary surgeons on behalf of their clients for testing and

post-mortem examination, provides veterinary consultancy advice and performs a wide range of investigations into diseases of domesticated livestock and wildlife. The VLA provides laboratory and field support to HPA and NPHS in England and Wales on behalf of Defra and the Welsh Assembly Government in the investigation and diagnosis of a range of predominantly non-statutory zoonoses (under a Memorandum of Understanding with the HPA).

2.6 Health and Safety Executive (HSE)

<http://www.hse.gov.uk/biosafety/diseases/zoonoses.htm>

The HSE has the broad remit of protecting people's health and safety by ensuring risks in the changing workplace are properly controlled, including protection from infectious hazards that may be encountered in workplaces such as factories, commercial farms, hospitals and schools. This is carried out through inspection and the use of statutory powers and the regulation of risk through risk assessment.

HSE does not have enforcement responsibility in offices, shops (including pet shops) and other parts of the service sector, such as farms open to the general public where commercial agriculture is not the main enterprise. These situations are covered by LAs (see below).

2.7 Food Standards Agency (FSA)

<http://www.food.gov.uk/>

The FSA is a non-ministerial Government department responsible for protecting public health and the interests of consumers in relation to food throughout the UK. Its remit is wide, covering the whole food chain including primary producers, manufacturers, distributors, retailers and caterers. The Agency is involved in the cross-Government response to outbreaks of animal disease and will provide advice on the possible food safety implications. FSA involvement may extend to incidents where the risk of food-borne transmission is negligible but where there is a perception of risk by consumers.

2.8 Meat Hygiene Service (MHS)

<http://www.food.gov.uk/foodindustry/meat/mhservice/>

The Meat Hygiene Service (MHS) is an executive agency of FSA and is responsible for carrying out official controls in approved fresh meat premises across Great Britain. MHS provides audit and inspection services in approved slaughterhouses, cutting plants, game-handling establishments, and co-located minced meat and meat products premises and ensures that the meat industry safeguards the health of the public, and the health and welfare of animals, through proportionate enforcement of legislation.

Official controls require specific inspections of all animals, carcasses and offals and risk-based audits to verify that Food Business Operators (FBOs) comply with EU Food Hygiene Regulations. This includes routine surveillance and reporting of post-mortem conditions to farmers, notifying Animal Health of any suspect cases of notifiable disease and, during a disease outbreak, designating, inspecting and recommending re-approval of affected slaughter and cutting facilities once they have been cleansed and disinfected to the satisfaction of the official veterinarian.

2.9 Local authorities (LAs)

All local authorities have responsibilities under the Civil Contingencies Act to respond to local and national emergencies. County councils and unitary authorities are responsible for

enforcing legislation relating to the health and welfare of farmed animals, and food standards, including chemical contamination.

District councils and unitary authorities are responsible for -

- The investigation of communicable disease outbreaks within their community
- Enforcing legislation relating to food safety and hygiene
- Licensing of animal establishments, including pet shops
- Health and safety enforcement at work, including shops, offices, hotels and restaurants
- Ensure a stray dog collection service is provided
- Responding to pest control issues

2.10 Primary Care Trusts (PCTs) and Local Health Boards (LHBs)

PCTs/LHBs are given primary responsibility by the NHS for the health of the local population. Although the HPU/HPT would typically lead the local response to a zoonotic incident, the PCT/LHB, through the Director of Public Health (DPH), will provide additional support ranging from information analysis and data processing to coordinating the primary care response such as issuing antiviral agents or arranging screening at GP surgeries. PCTs /LHBs may also provide a spokesperson for the media and it is therefore expected that the DPH or deputy will be a member of any incident or outbreak control team.

2.11 NHS Direct

<http://www.nhsdirect.nhs.uk/>

NHS Direct is a health professional led telephone help-line which covers the whole of England and Wales. Calls to NHS Direct from members of the public are made either for general information or for advice about a specific medical complaint. NHS Direct services may also be utilised during zoonotic incidents to provide specific advice or to facilitate local help-lines.

3 Statutory Notification and Reporting of Zoonotic Diseases

A number of zoonotic infections are statutorily notifiable under veterinary and/or human legislation (see Table 1, page 9); however, not all zoonotic diseases in animals and humans are notifiable. Relevant animal legislation includes the Animal Health Act 1981 (as amended), the Zoonoses Order 1989, the Specified Animal Pathogens Order (SAPO) 2008, and for humans the Public Health (Control of Disease) Act 1984, Public Health (Infectious Diseases) Regulations 1988, and the Health and Social Care Act 2008. This latter updates the Public Health (Control of Disease) Act 1984 with the aim of providing a more effective and proportionate response to infectious disease.

The primary purpose of the notification system is to identify possible outbreaks and epidemics and initiate appropriate action as soon as possible. Accuracy of diagnosis is secondary, and generally *clinical suspicion* is all that is required. If the diagnosis later proves incorrect, the notification can be changed or cancelled.

The significance of notification differs in human and veterinary contexts. In animals, notifiable disease mainly falls within the remit of Animal Health, who should always be the first point of contact in such cases. There are clearly defined courses of action for each notifiable disease. The VLA is the first point of contact for non-statutory (i.e. non-notifiable/non-reportable) zoonoses and for *Salmonella*. VLA has established procedures for dealing with *Salmonella* incidents in animals, with VTEC O157 and *Cryptosporidium* infection linked to direct animal contact, and can also assist with the investigation of other non-statutory zoonoses on a case by case basis.

Under the Zoonoses Order 1989 laboratories have a statutory requirement to report the isolation of *Salmonella* and *Brucella* from animals (referred to as reportable diseases). Additional legislation in place for human infections requires employers and the self-employed to report work-related incidents and diseases (including certain infections) to the HSE under the Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations, 1995 (RIDDOR www.hse.gov.uk/riddor). In addition, a number of animal pathogens (as specified in SAPO 2008) must be notified to Animal Health. A single regulatory framework has recently been proposed to cover work with human and animal pathogens which currently fall under different regulations, including SAPO. A legislative and regulatory reform order is being used to amend the Health and Safety at Work Etc. Act so that single regulations dealing with both human and animal pathogens can be made under the Act. The proposed regulations will in future apply to animal *and* human health.

Under the Public Health (Control of Disease) Act 1984 and Public Health (Infectious Diseases) Regulations 1988 clinically diagnosed cases of notifiable disease (including zoonoses) in humans should be reported by the responsible clinician to the proper officer of the local authority (this is usually the CCDC). This information is collated as Notifications of Infectious Disease (NOIDs - see section 4.2). Limitations to the notifications system lead to a review of Public Health Law in 2007, and at the time of writing, a wide-ranging consultation initiated by the DH is in the final stages. The aim is to update the list of notifiable diseases, to introduce mandatory laboratory notification, and to formulate draft Health Protection Regulations.

Table 1: Notifiable^a and reportable^b zoonotic diseases and organisms in humans and animals in England & Wales

Disease	Requirements for Humans		Requirements for Animals		
	Notifiable ^a	Reportable to HSE under RIDDOR	Notifiable (to Animal Health)	Reportable ^b	Notifiable under SAPO ^f
Anthrax	√	√	√		√
Avian Influenza (highly pathogenic strains only) (All H5 and H7 strains)			√		√
Bovine spongiform encephalopathy			√		
Brucellosis		√			
<i>Brucella abortus</i> , <i>B. melitensis</i>			√	√	√
<i>Brucella ovis</i> (contagious epididymitis, sheep)			√	√	√
<i>Brucella suis</i> (pigs) and all other <i>Brucella</i> species				√	√
Chlamydiosis					
▪ <i>Chlamydochila abortus</i>		√			
▪ <i>C. psittaci</i>	(√) ^c	√	d		
Diphtheria (includes toxigenic <i>C. ulcerans</i>)	√				
Encephalitis (all causes) ^g	√				
Equine viral encephalomyelitis			√		√
<i>Echinococcus multilocularis</i> and <i>granulosus</i>					√
Equine morbillivirus (Hendra)			√		√
“Food poisoning” (all causes)	√				
Glanders and Farcy (<i>Burkholderia mallei</i>)			√		√
Leptospirosis	√	√			
Lyme disease		√			
Meningitis (all causes) ^g	√				
Newcastle disease and paramyxovirus infection			√		√
Plague (<i>Yersinia pestis</i>)	√				
Q fever (<i>Coxiella burnetii</i>)		√			
Rabies	√	√	√		√
▪ Classical rabies virus (genotype 1)					
▪ Other rabies virus genotypes (e.g. European Bat Lyssavirus)					
Relapsing fever	√				
Rift valley Fever			√		√
<i>Salmonella</i> spp				√	
<i>Streptococcus suis</i>		√			
<i>Trichinella spiralis</i>					√
Tuberculosis	√	√	√ ^e		
Vesicular Stomatitis			√		√
Viral haemorrhagic fevers (all)	√				
Viral hepatitis (Hepatitis E)	√	√			
West Nile Fever			√		

^a Notifiable diseases are those where there is a statutory requirement to report clinical cases of disease.

^b Reportable diseases (in animals) are those where there is a statutory requirement to report laboratory confirmed isolation of organisms of the genera *Salmonella* and *Brucella* under the Zoonoses Order 1989. The report is to be made by the laboratory which isolated the organism from an animal derived sample.

^c A local anomaly exists in Cambridgeshire where psittacosis is reportable to the local CCDC under a local bylaw.

^d Legislative veterinary powers under The Psittacosis or Ornithosis Order 1953 (S.I. 1953 No. 38) give discretionary powers to serve notices to impose movement restrictions and require cleansing and disinfection of affected premises, and

so Animal Health may be involved in the control of Psittacosis, even though it is not actually a notifiable disease in animals or birds.

^e Under the Tuberculosis (England) Order 2007, the Tuberculosis (Wales) Order 2006, and the Tuberculosis (Scotland) Order 2007, there is a statutory requirement to notify the suspected presence of TB in the carcase of any bovine, deer, farmed or companion (pet) mammal to nearest Animal Health Divisional Veterinary Manager (DVM). Furthermore, identification of *M. bovis* in samples taken from any mammal (other than man) is also notifiable to Animal Health unless the organism was present in the sample as a result of an agreed research procedure. Notifying the suspicion of TB in a living domestic animal in the course of clinical examination, surgery, by radiography or in biopsy material is not mandatory (except for cattle or deer), but submission of clinical samples from such cases to VLA is encouraged.

^f Under the Specified Animal Pathogens Order 1998 anyone with reasonable grounds for suspecting the presence of these specific zoonoses should notify a veterinary inspector forthwith, unless they are held under licence made under this legislation. This requirement only relates to avian influenza viruses and Newcastle Disease viruses which are either uncharacterised or have been found to be of higher pathogenicity (set out in the legislation), or for avian influenza type A viruses H5 or H7 subtypes with specified nucleotide sequences. *Echinococcus* and *Trichinella* are only notifiable under this Order.

^g These are syndromes that are notifiable in human medicine.

4 Data sources and routine zoonoses surveillance

4.1 Animals

Animal populations are monitored by the VLA and Animal Health for the appearance of notifiable or novel diseases or changing trends in existing diseases, including actual and potential zoonoses. The VLA undertakes scanning surveillance through the collection, collation and analysis of disease data, based on submissions to VLA Regional Laboratories, which are included in the Veterinary Investigation Diagnosis Analysis (VIDA) database (see appendix 4). The reporting of *Salmonella* isolations from defined animal species, their environment and animal feeding stuffs is mandatory under the Zoonoses Order 1989. VLA is responsible for the laboratory testing, reporting, data management, analysis and investigation of *Salmonella* incidents in animals and receives reports of isolations from other veterinary laboratories. Surveillance reports by the VLA on animal diseases, including zoonoses, covering England and Wales are published monthly in the Veterinary Record. Quarterly and annual reports, including those specifically relating to reportable infections, such as *Salmonella*, and non-statutory zoonoses and infections shared between man and animals, are available on the internet (http://www.defra.gov.uk/vla/reports/rep_surv.htm). An important aspect of surveillance with respect to food-borne disease is carried out by the Meat Hygiene Service who collect and communicate post-mortem conditions found in slaughterhouses to primary producers, and notify suspect cases of notifiable disease to Animal Health.

The annual report *Trends and sources of specified zoonotic agents in animals, feeding stuffs, food and man in the UK* contains information on both zoonoses that are important for the public health in the whole European Union, as well as zoonoses which are relevant on the basis of the national epidemiological situation. The report is available at <http://www.defra.gov.uk/animalh/diseases/zoonoses/trends-sources.htm>.

The annual *UK Zoonoses Report* includes a summary of all zoonoses surveillance data, utilising information from all agencies which are involved in monitoring zoonoses. (<http://www.defra.gov.uk/animalh/diseases/zoonoses/reports.htm>).

4.2 Humans

Three main data sources are used to build a picture of the burden of zoonotic infection in the human population in England and Wales. In addition local and regional surveillance systems may exist that provide more detailed local information. The main data sources for England and Wales are:

- National surveillance schemes for any laboratory-confirmed infections, based on voluntary reporting by diagnostic laboratories
- Enhanced surveillance for specific zoonoses (e.g. Lyme disease and leptospirosis) coordinated through relevant national reference laboratories.
- Notifications of infectious disease (NOIDS)
http://www.hpa.org.uk/infections/topics_az/noids/menu.htm
http://www.hpa.org.uk/infections/topics_az/zoonoses

Data are reported quarterly in the *Health Protection Report* <http://www.hpa.org.uk/hpr/archives/Infections/zoonoses.htm>, and annually in both the Trends and Sources report (<http://www.defra.gov.uk/animalh/diseases/zoonoses/trends-sources.htm>) and the *UK Zoonoses Report* (<http://www.defra.gov.uk/animalh/diseases/zoonoses/reports.htm>)

5 Liaison

Formal liaison between human and animal health professionals, including those in other parts of the UK, is achieved via the following groups.

- **The UK Zoonoses, Animal Diseases and Infections Group (UKZADI)**
The UK Zoonoses Group (UKZG) and the Surveillance Group on Diseases and Infections in Animals (SGDIA) have merged to form the new UK Zoonoses, Animal Diseases and Infections (UKZADI) Group. The group advises as appropriate the Chief Medical Officers and Chief Veterinary Officers, DH in England, Welsh Assembly Government, Scottish Government, DARDNI, and the FSA on important trends and observations which impact on animal and public health, including where necessary preventative and remedial action. It provides a strategic overview and means of ensuring overall co-ordination of public health action at the UK, national and local level with regard to existing and emerging zoonotic infections, and trends in antimicrobial resistance and animal-related chemical risks to the food chain.
- The joint **Human Animal Infections and Risk Surveillance (HAIRS)** www.hpa.org.uk/infections/topics_az/zoonoses group is a multi-agency and cross-disciplinary horizon scanning group with members from the HPA, Defra, Animal Health, VLA and DH. The Chair of the National Expert Panel on New and Emerging Infections and representatives from the NPHS, Health Protection Scotland (HPS), Scottish Government, CDSC Northern Ireland, and the FSA also attend. The group was established in 2004 and meets monthly. It acts as a forum to identify and discuss infections with potential for interspecies transfer (particularly zoonotic infections). HAIRS provides minutes of all its meetings and an annual summary of issues it has discussed to UKZADI, and, as stated above, issues of specific concern can be raised directly with UKZADI.
- The **HPA Regional Zoonoses Leads Group** was recently formed to strengthen links, share expertise and contribute to the effective prevention and control of zoonotic infections in England. Membership includes each LaRS Regional Zoonoses Lead, representatives from the Zoonoses section at HPA Centre for Infections and the HPA Regional Microbiology Network zoonoses lead. In turn, regional leads promote joint working, good practice and communication across agencies in their area via local Zoonoses Liaison groups (ZLG). A quarterly Zoonoses Newsletter is produced.
- **Zoonoses Liaison groups** are part of a developing network variously comprising members of HPA, PCTs, VLA, Animal Health, Defra and LAs which meet to discuss local zoonotic issues. These vary in approach and frequency of meeting, with some being large established groups. Regional groups also exist in Wales comprising members from NPHS, Local Health Boards, VLA, Animal Health and LAs. An overarching group in Wales is the Interspecies Infections Group (IIG).
- The **Defra Antimicrobial Resistance Co-ordination group (DARC)** has members drawn from Defra, HPA, DH, FSA, VLA, Veterinary Medicines Directorate, and the devolved administrations. It considers antimicrobial resistance in all zoonotic bacterial organisms, as well as potential animal reservoirs of resistance genes in commensal bacteria, and meets quarterly. Antimicrobial resistance incidents in zoonotic organisms requiring investigation will usually be coordinated by members of this group.

6 Zoonotic incidents and outbreaks

6.1 Settings where exposure can occur

The main settings in which zoonotic incidents are likely to be encountered by human and/or veterinary health professionals are outlined below. Diagnoses may be based on clinical suspicion or follow laboratory testing and confirmation by either medical or veterinary laboratories.

6.1.1 Amenity premises and activities open to the general public

These include a range of settings where members of the public come into contact with animals, for example farm open days, open farms (including school and city farms), animal parks, zoological gardens, agricultural shows, music festivals on agricultural land, camping sites on farm land and public parkland with deer or other wildlife. In these situations the potential impact of any zoonotic hazard is increased because of the size of the population at risk; there is also a duty of care by the owners or organisers. The main zoonotic organisms commonly encountered in these situations are VTEC O157, *Cryptosporidium* and *Salmonella* but may also include other diseases such as Q fever, orf and ringworm. Under the Health and Safety at Work Etc. Act 1974, enforcement comes under the general remit of either HSE (Section 2.6) and/or LAs (section 2.9). depending on the individual situation.

6.1.2 Pet shops and similar animal retail outlets

The potential impact of any zoonotic hazard is similar to that outlined in 6.1.1 because of the likelihood of exposure to the general public as well as employees. In addition there is often a greater risk of exposure to exotic or unusual pathogens because of the wide variety of animals kept on some of these premises and their origin. Under the Health and Safety at Work Etc. Act 1974, enforcement comes under the general remit of LAs (section 2.9) because of their role in licensing premises and enforcing Health and Safety legislation.

6.1.3 Primary agricultural premises, commercial farms, abattoirs, cutting plants, feed mills, and other commercial premises

Zoonotic risks in these situations are often occupationally acquired, and enforcement is therefore the responsibility of the HSE (Health and Safety at Work Etc. Act 1974). The risks to the wider public are usually minimal unless food is involved, such as through the sale of unpasteurised milk, through farm gate sales or from presence of on-site Bed & Breakfast accommodation.

6.1.4 Miscellaneous occupational and leisure pursuits involving zoonoses

These include occupational zoonoses affecting, for example, sewage workers, and individuals undertaking a wide range of animal-associated hobbies and pastimes including bat workers (e.g. European Bat Lyssaviruses) and water-related activities (e.g. leptospirosis). Responsibility for these falls within the remit of the Field Operations Directorate of HSE (for contact details see section 8) and/or LAs.

6.1.5 Domestic settings

People live in close contact with a wide range of animal species as pets and therefore zoonotic infections in domestic households can arise from various sources. Infections range from the more common (cryptosporidiosis, salmonellosis), to the rare (*Corynebacterium ulcerans* and methicillin-resistant *Staphylococcus aureus* [MRSA]). The likelihood of transmission to the wider public is generally very limited, but secondary person-to-person spread within the extended family can be significant as occurs with VTEC O157 for example. Responsibility for investigating transmission from animals to humans in the domestic setting rests with the HPA.

6.2 Assessment of risk and response

Diseases and incidents in animals with zoonotic potential should be discussed with the local HPU on a case by case basis at the discretion of the veterinary surgeon involved (most commonly from VLA). Contact details for organisations can be found in section 8 and appendices 6-8. Whether to report cases of potentially minor zoonoses to the HPU will depend on the individual situation but if in doubt it is best to make the report. A report should always be made where there is a possible associated human case, since the HPU may not be aware of this. Most veterinary diagnoses of minor zoonoses such as orf, ringworm, enzootic abortion (*Chlamydophila abortus*) or yersiniosis can be simply dealt with by including a comment about the zoonotic hazard in the laboratory report to the submitting veterinary surgeon/farmer, and do not require contact with the CCDC. However, for some zoonotic infections there may be a greater risk to the wider public, and therefore risk assessment should include consideration of factors such as disease severity and spread, possible interventions, and the context in which the case/incident has occurred.

Where cases of suspected zoonotic disease come first to the attention of human health professionals, early discussion with veterinary colleagues is desirable. In the case of notifiable and reportable zoonoses of animals (excluding *Salmonella*) this should be Animal Health, and for *Salmonella* and non-notifiable zoonoses such as Q fever, cryptosporidiosis or VTEC O157, VLA should be informed (see Table 1, page 9 for list of notifiable diseases).

As outlined in the flowcharts in Section 1 (pages 2-3), many non-statutory zoonotic incidents can be dealt with by telephone or email contact or by routine reporting such as is adopted (by the VLA) for routine *Salmonella* isolations. For incidents requiring urgent follow-up, communications will usually involve an initial telephone call or email (initiated either way) between the local VLA regional laboratory in which the incident occurred, the CCDC of the local HPU, and/or the Chief Environmental Health Officer/Environmental Health Officer (CEHO/EHO) of the LA. In the case of the isolation of certain *Salmonella* serotypes considered to be of particular public health significance, such as *S. Enteritidis* or *S. Typhimurium*, a farm investigation and advisory visit to the premises involved would usually be carried out by staff at the VLA. Animal Health is normally only involved in the event of notifiable zoonotic disease, but occasionally they may receive the initial report concerning other zoonoses and pass it on to the VLA or others. Animal Health is also informed by the VLA in the case of *Chlamydophila psittaci* diagnoses (see Table 1 footnotes).

Major zoonotic incidents or outbreaks associated with either statutory or non-statutory diseases within any of the scenarios outlined above should be dealt with through a multi-disciplinary incident or outbreak control team usually under the chairmanship of the CCDC or zoonoses lead of the HPU (see section 6.3). Guidance for a range of specific zoonotic infections is available on the HPA and Defra websites. Specific procedures are in place relating to outbreaks of notifiable zoonotic disease such as highly pathogenic avian influenza (HPAI), rabies and other exotic diseases (see 6.3.1). In England and Wales, investigation and advice relating to incidents and outbreaks involving the wider range of non-statutory zoonoses such as VTEC O157, cryptosporidiosis, and Q fever fall within the remit of the VLA, and assistance can be given to the HPA on request.

6.3 Investigation and management of incidents/outbreaks

6.3.1 Formation of an Incident or Outbreak Control Team (ICT/OCT)

An Incident or Outbreak Control Team should be formed (see above) for significant outbreaks of zoonotic disease. Standard principles for managing incidents/outbreaks apply, and reference should be made to local and/or national incident management plans. The HPA has overall responsibility where these involve human infections in which a zoonotic source is possible, or there is an outbreak of zoonotic disease in animals with potential for significant human infection. The scale of the response will be determined by the nature of the incident,

which will also dictate the resources required, responsibility for the management of the incident, and the communications pathways. From a human health perspective the HPA Incident and Emergency Response Plan defines the level of a given incident and the actions expected. Incidents are categorised according to five levels, with one being a small local incident and five a catastrophic national incident. In general terms smaller local incidents will be led by LaRS and larger national incidents by Cfl. Defra's Framework Response Plan for Exotic Animal Diseases (December 2008) covers six zoonotic infections (rabies, avian influenza, Newcastle disease, glanders, equine viral encephalomyelitis, and West Nile virus) and ranks incidents from zero to four, with four being the most serious (<http://www.defra.gov.uk/animalh/diseases/pdf/framework-response081209.pdf>). In the case of these infections, disease control operations are centrally coordinated by Defra's National Disease Control Centre (NDCC) in London, with the local response being managed by one or more Local Disease Control Centres (LDCCs). Other agencies, organisations and operational partners are involved as appropriate for the incident.

6.3.2 Membership of OCT

Depending on the individual situation and disease, membership of the OCT will include representatives from the local HPU (CCDC-chair and other staff), PCT (DPH or CPH, Chief Executive), local acute Trust (Microbiologist or Virologist, Consultant in Infectious Diseases, Infection Control Nurse), LA (EHO) and others as necessary, for example, HSE or FSA. Veterinary involvement i.e. Animal Health (notifiable zoonoses), and/or VLA (non-statutory zoonoses and *Salmonella*), should be sought as early as possible, particularly if field investigation and laboratory assistance is likely to be required (e.g. with VTEC O157 investigations). Animal Health and VLA generally represent Defra unless the scale or nature of the incident dictates the direct involvement of Defra. For further information on establishment and remit of an OCT, see appendix 5.

6.3.3 Investigation

Follow-up investigations may be instigated by the OCT or as a local response by agreement of involved agencies. Epidemiological investigation should include:

- Agreement on case definitions
- Identification of the population at risk
- Case finding
- Data collection using structured epidemiological approaches
- Descriptive epidemiology with the potential for analytical studies to enhance the value of data collected and increase the scientific knowledge gained from the outbreak

Laboratory investigation, such as animal sampling and microbiological investigation of cases, contacts, food, water and environmental samples, should be considered if they are likely to identify the source and lead to an appropriate intervention. Testing and sampling should not be undertaken without assessing the implications of positive and negative results. Prior discussion and a systematic multidisciplinary approach are vital to ensure thorough investigation which will inform public health action. Human samples should be discussed and agreed with the Consultant Medical Microbiologist, and veterinary investigations and liaison coordinated by Animal Health and/or VLA as appropriate in collaboration with Defra. Sample collection may be undertaken by the EHO, VLA or a private vet as agreed by the OCT or by agreement between agencies involved, bearing in mind likely cost benefits. The Zoonoses Monitoring Regulations 2007 (http://www.opsi.gov.uk/si/si2007/uksi_20072399_en_1) provide powers to undertake investigation of zoonoses in animals that pose a threat to public health.

Funding for short term investigations undertaken by the VLA on request by the HPA is provided by Defra under the Memorandum of Understanding with the HPA. Whilst the VLA endeavours to support public health investigations, in some circumstances laboratory examinations, particularly for general screening purposes, may need to be charged to the requesting organisation.

6.3.4 Control measures

The OCT or involved agencies should agree on the response required and what, if any, control measures should be put in place with enforcement by the appropriate organisation (usually LA, HSE or Animal Health). It is important that any such measures are practicable, worthwhile, achievable and ideally enforceable where appropriate. It is also essential that wider implications and impact are fully considered. On occasion it may be necessary to implement control measures before a definitive diagnosis is made. Control measures may include increased education and awareness, specific measures such as vaccination, or changes in farming practices. The implementation and effectiveness of control measures should be monitored and a decision made by the OCT when the outbreak has ended and control measures can be lifted.

6.3.5 Communications

The OCT or involved agencies should agree on a strategy for handling communications for each incident. This will ensure that consistent information is provided to the media, general public and other stakeholders. The OCT should appoint a spokesperson and prepare interim and final briefing statements to be used by that person. Any statements will be made available to all team members and all enquiries from the media should be directed to the appointed spokesperson. Individual members of the OCT should not respond to requests for information. The Team should provide early and clear information on the nature and scale of the problem and on the action recommended, if any, and should update this information regularly. Before advice is given to the public the Team will identify the target population and formulate and distribute special advice for those with particular needs. Information will be reinforced as long as the incident lasts. When the outbreak has been controlled those at risk initially must be informed, and the public must be informed when the outbreak is over.

7 Confidentiality and data protection

7.1 Confidentiality

Confidential or identifiable information may be exchanged between those who have a legitimate need if the situation requires this. The decision to exchange such information is a professional responsibility and will depend on the nature and risk of disease to the public. The exchange of human and animal data have been addressed respectively by the Caldicott Committee (Report 1997) and the Royal College of Veterinary Surgeons, which both indicate that if there is an immediate and serious danger to public health by a particular incident the need to share information with other agencies on a 'need to know' basis overrides the confidentiality principle. Indeed failure to share confidential/identifiable information in such circumstances could be interpreted as negligence. As in all matters, a balance has to be reached and the decision to share patient/client information should be made in good faith only when absolutely necessary and in the public interest.

All parties involved should:

- Be aware of their responsibilities
- Understand and comply with the law
- Be able to justify any exchange of confidential/identifiable information
- Have secure procedures in place for the exchange and storage of confidential/identifiable information, and confirm that other Agencies have secure systems for email

7.2 Data Protection Act 1998

The Data Protection Act 1998 requires the registration of data relating to individuals that is held on computer and manual systems. Provision is made in Section 34(8) of the Act for the non-consensual disclosure of personal data when there are reasonable grounds to believe that disclosure is urgently required to prevent injury or damage of the health of any person or persons. The decision to exchange personal data as with confidential/ identifiable information must be made in good faith and in the interest of public health protection.

8 Where to find help and how to make contact

See associated maps (Appendices 6-8) for regional/local contacts.

Health Protection Agency (HPA)

Website: www.hpa.org.uk

Centre for Infections

☎ 020 8200 4400 (24 hours), Zoonoses section: 020 8327 7771

Email to Zoonoses Section: zoonoses@hpa.org.uk

Specialist and Reference laboratories, see

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1153846673361?p=1153846673361>

Local and Regional Services (LaRS), see Appendix 6 and

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListDate/Page/1169747331532?p=1169747331532>

Animal Health

Website: <http://www.defra.gov.uk/animalhealth/>

All enquiries concerning notifiable zoonoses incidents should be made to the relevant local Animal Health Divisional Office – see appendix 7 or

<http://www.defra.gov.uk/animalhealth/about-us/contact-us/search/>

Veterinary Laboratories Agency (VLA)

For local contact details see appendix 8 or VLA website www.defra.gov.uk/vla/default.htm

Email: enquiries@vla.defra.gsi.gov.uk

☎ VLA Weybridge: 01932 341111 (general switchboard only)

Department for Environment Food and Rural Affairs (Defra)

Defra zoonoses team Email: zdri@defra.gsi.gov.uk (please Email FAO Zoonoses VA)

☎ Defra Helpline 0845 933 5577

Defra Helpline Email: helpline@defra.gsi.gov.uk

Website <http://www.defra.gov.uk/default.htm>

Local Authorities

Find your LA: <http://local.direct.gov.uk/LDGRRedirect/Start.do?mode=1>

Map of all LAs: http://www.statistics.gov.uk/geography/downloads/UK_LADUACty.pdf

Health and Safety Executive (HSE)

☎ Infoline 0845 345 0055

Website: <http://www.hse.gov.uk/index.htm>

To find local offices: <http://www.hse.gov.uk/contact/maps/>

Food Standards Agency (England)

☎ 020 7276 8000. Emergencies only: 020 7270 8960

Email: helpline@foodstandards.gsi.gov.uk

Website <http://www.food.gov.uk/>

Food Standards Agency (Wales)

☎ 02920 678999

Email: wales@foodstandards.gsi.gov.uk

Website <http://www.food.gov.uk/wales/>

Meat Hygiene Service

☎ 01904 455501

Email: mhs.enquiries@mhs.gov.uk

Website <http://www.food.gov.uk/foodindustry/meat/mhservice/aboutmhs/>

Devolved Administrations

Wales

National Public Health Service (NPHS) Wales

☎: 02920 402471

Email: surveillance.requests@nphs.wales.nhs.uk OR zoonosis@nphs.wales.nhs.uk

Website: <http://www.wales.nhs.uk/sites3/home.cfm?orgid=719>

Scotland

Health Protection Scotland (HPS)

☎ 0141 300 1100

Email: hpsenquiries@hps.scot.nhs.uk

<http://www.hps.scot.nhs.uk/index.aspx>

Link to the Scottish Zoonoses Guidelines:-

<http://www.documents.hps.scot.nhs.uk/giz/general/guidelines-investigation-of-zoonotic-diseases.pdf>

Scottish Agricultural College, Veterinary Services, <http://www.sac.ac.uk/>

Phone: 0131 535 3139

Northern Ireland

Communicable Disease Surveillance Centre Northern Ireland (CDSC NI)

☎ 028 9026 3765

Email: cdscni@hpa.org.uk

<http://www.cdscni.org.uk/default.asp>

Department of Agriculture and Rural Development Northern Ireland (DARD NI)

☎ Help line 028 9052 4999

Email: dardhelpline@dardni.gov.uk

<http://www.dardni.gov.uk/index/contact-us.htm>

9 Glossary of organisations/terms used

AHO	Animal Health Officer
AHDO	Animal Health Divisional Office
CCDC	Consultant in Communicable Disease Control
CDSC NI	Communicable Disease Surveillance Centre, Northern Ireland
CEHO	Chief Environmental Health Officer
Cfi	Centre for Infections
CMO	Chief Medical Officer
CHP	Consultant in Health Protection
CPH	Consultant in Public Health
CVO	Chief Veterinary Officer
Defra	Department for Environment Food and Rural Affairs
DARD NI	Department of Agriculture and Rural Development, Northern Ireland
DH	Department of Health
DPH	Director of Public Health
DVM	Divisional Veterinary Manager (of Animal Health)
EIZ	Emerging Infections and Zoonoses section (of HPA Cfi)
EHO	Environmental Health Officer
FSA	Food Standards Agency
HAIRS	Human Animal Infections and Risk Surveillance group
HPA	Health Protection Agency
HPS	Health Protection Scotland
HPT	Health Protection Team (in Wales)
HPU	Health Protection Unit
HSE	Health and Safety Executive
ICDS	Infection and Communicable Disease Service
LA	Local Authority
LHB	Local Health Board (in Wales)
LaRS	Local and Regional Services
MHS	Meat Hygiene Service
MoU	Memorandum of Understanding
NHS	National Health Service
NOIDS	Notifications of Infectious Disease
NPHS Wales	National Public Health Service Wales
OCT	Outbreak control team
PAR	Population at risk
PCT	Primary care trust
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RMN	Regional Microbiology Network
RVM	Regional Veterinary Manager (of VLA)
RE	Regional Epidemiologist
SVS	State Veterinary Service (now known as Animal Health)
SAPO	Specified Animal Pathogens Order
UKZADI	UK Zoonoses Animal Diseases and Infections group
VA	Veterinary Advisor (Defra)
VIDA	Veterinary Investigation Diagnosis Analysis
VIO	Veterinary Investigation Officer
VO	Veterinary Officer
VLA	Veterinary Laboratories Agency
ZLG	Zoonoses Liaison Group

Appendix 1: Table of Endemic Zoonotic Diseases and Organisms in England & Wales

Disease	Organism	Main reservoirs	Usual mode of transmission to humans	Diagnosed cases in humans (no. cases in 2007)	Occurrence in animals/ endemic
Anthrax*	<i>Bacillus anthracis</i>	livestock, wild animals, environment, animal products	direct contact, ingestion, inhalation	Very rare (0)	Yes, but sporadic
Avian influenza* (excluding HPAI)	Influenza virus, avian strains e.g. H5, H7	poultry, ducks, wild birds	direct contact	Very rare (LPAI H7N2 4 cases)	Rare and sporadic
Babesiosis	<i>Babesia divergens</i>	Cattle/ticks (but not infectious to humans via animal, only via tick)	Tick bite	Very rare - not seen in UK	Relatively common in endemic areas
Bovine tuberculosis*	<i>Mycobacterium bovis</i>	cattle	Unpasteurised milk, infected animals or animal products	Uncommon (26)	Yes, endemic in areas
Brucellosis*	<i>Brucella</i> species (<i>B. abortus</i> , <i>melitensis</i> , <i>ovis</i> , <i>suis</i> , and others)	cattle, goats, sheep, pigs, marine mammals	dairy products, milk, direct contact with foetal membranes	Uncommon, usually imported (8)	Most <i>Brucella</i> spp are not seen in E/W/S but <i>B. abortus</i> endemic in NI, and marine mammal <i>Brucella</i> spp isolated in GB.
BSE* (vCJD)	BSE prions	Cattle	Ingestion of BSE contaminated beef products	Very rare. One new diagnosis in 2007 (Total to date 166)	Has been in steady decline since 1992
Cat scratch fever	<i>Bartonella henselae</i>	Cats	Bite, scratch	Moderate (135 in 2006)	Yes; unknown prevalence
Campylobacteriosis	<i>C. fetus fetus</i> , <i>C. jejuni</i> , (<i>C. venerealis</i> fetopathy in cattle)	Sheep, goats, cattle, dogs/cats/poultry etc	Foodborne (direct contact)	Common foodborne illness, rare by other exposure other than occupational	Common in birds (C.j), <i>C. fetus fetus</i> common cause of abortion in sheep and infertility/abortions in cattle
	<i>C.coli</i> and <i>C. jejuni</i>	Poultry, cattle etc	Foodborne	Common (1000s)	Endemic in poultry, cattle etc but does not cause animal disease
Cowpox	<i>Cowpox virus</i>	Cats, cattle (reservoir host is wild rodents)	Direct contact	Very rare (0)	Cats are the main source. Extremely rare in cattle
Enzootic abortion	<i>Chlamydophila abortus</i>	Ruminants, principally sheep	direct contact, aerosol	Probably rare	Commonest cause of abortion in sheep (goats), rarely cattle.
Caseous lymphadenitis, pseudotuberculosis	<i>Corynebacterium pseudotuberculosis</i>	Sheep and goats	Direct to skin wounds	Rare	Common and endemic in sheep (and goats)-abscesses(skin and internal)

Cryptosporidiosis	<i>C. parvum</i>	All species especially sheep and cattle	Faecal-oral	Common	Common and endemic in young ruminants, especially lambs and calves
Cysticercosis	<i>Taenia saginata</i> <i>Taenia solium</i>	cattle pigs	meat	Uncommon (~95) Rare (0)	Endemic No
Dermatophilosis (mycotic dermatitis)	<i>Dermatophilus congolensis</i>	Dermatitis in sheep and cattle	Direct contact	Unknown	Endemic (skin lesions)
<i>E. coli</i> (verocytotoxigenic)	Serogroup O157 and other serogroups such as O26	Most species especially cattle and sheep	Direct contact and faecal-oral/food etc	Common ~1000	O157 is an endemic commensal in cattle, sheep etc not causing clinical disease. Other serogroups can cause animal and human illness
Encephalitis	Many causes, often viral, occasionally zoonotic	(depends on organism)	(depends on organism)	Common ~1000	Depends on definition of encephalitis. Not strictly comparable.
Erysipeloid (humans), erysipelas (animals)	<i>Erysipelothrix rhusiopathiae</i>	pigs, fish, environment	direct contact	Rare (4)	Endemic; fairly common in pigs, and turkeys; also sheep. Various disease manifestations
Fasciolosis	<i>Fasciola hepatica</i>	Cattle, sheep, goats, deer etc	Watercress, leisure pursuits around water; not via consumption of affected liver	Rare (3)	Endemic, common in many areas, particularly the West. Subclinical to overt disease
"Fish tank granuloma"	<i>Mycobacterium marinum</i>	(Fish)	direct contact, water	Uncommon (16)	Rarely reported
"Food poisoning"\$	Many aetiologies; bacterial, viral, protozoan Often zoonotic	Farm animals & poultry	Ingestion	Very common, estimated at 20% population per annum	Endemic, various aetiologies, depends on definition
Hepatitis E	Hepatitis E virus	not yet known	not yet known	Moderate (<100)	Yes, endemic in pigs
Hydatid disease*	<i>Echinococcus granulosus</i>	Dogs, foxes, sheep	ingestion of eggs excreted by dog	Rare, usually imported (10)	Yes, in Wales
Leptospirosis	<i>Leptospira</i> species, (many serotypes)	rodents, ruminants, horses	infected urine, water	Uncommon (74)	Endemic in cattle (serotype <i>Hardjo</i>) – abortion, infertility and milk drop. Serotype <i>Icterohaemorrhagiae</i> occurs in many species
Listeriosis	<i>L. monocytogenes</i> , <i>L. ivanovii</i>	Sheep, cattle etc	Food, direct contact unlikely	Moderate (259)	Endemic in ruminants (cattle/sheep and goats). Mainly CNS signs
Louping ill	Louping ill virus	sheep, grouse	direct contact, tick bite	V rare (0)	Yes, endemic in many tick areas
Lyme disease	<i>Borrelia burgdorferi</i>	ticks, rodents, sheep, deer,	tick bite	Common (797)	Yes, endemic in many tick areas

		small mammals			
Lymphocytic choriomeningitis	Lymphocytic choriomeningitis virus	rodents	direct contact	V rare (0)	Unknown
Orf	Orf virus	sheep	direct contact	Rarely reported (<5) but thought to be common in rural areas	Very common in sheep and goats (mouth, teats, feet) but rarely reported
Ornithosis / Psittacosis*	<i>Chlamydophila psittaci</i>	Birds, especially psittacines and poultry. <i>Chlamydophila</i> infections rarely diagnosed in poultry	Mainly aerosol, dust	Uncommon (38)	Parrots, poultry processing (ducks). Endemic in some wildfowl, especially pigeons, collared doves, some garden birds e.g. robins
Pasteurellosis	<i>Pasteurella multocida</i>	dogs, cats, many mammals	bite/scratch, direct contact	Moderate (395)	Common cause of pneumonia in many species (often secondary infection/carriers), and septicaemic disease in birds ("fowl cholera")
Q fever	<i>Coxiella burnetii</i>	cattle, sheep, goats, cats	aerosol, direct contact, milk, fomites. Parturition products	Uncommon (54)	Endemic in domesticated ruminants and wildlife. Mainly subclinical but abortion outbreaks can occur
Rabies*	Rabies viruses - 'classical' (genotype 1) and European bat lyssavirus EBLV2	cats, dogs, foxes, bats	animal bite/licks	Very rare (0)	No classical (i.e. canine) rabies in UK, however EBLV2 is endemic in some bats.
Rat bite fever (Haverhill fever)	<i>Streptobacillus moniliformis</i>	rats	bite/scratch, milk, water	Very rare (0)	Yes, in rodents
Red Mite	<i>Dermanyssus galinae</i>	Poultry, wild birds	contact	Not reported	Endemic and seen sporadically
Ringworm	Dermatophyte fungi	cats, dogs, cattle, many animal species	direct contact	Occasional (but under-reported)	Endemic and very common/under-reported. Very common in calves (skin)
Salmonella	Numerous serotypes	Wide species range. Mainly <i>S. Typhimurium</i> (and <i>S. Dublin</i>)	Direct contact and foodborne	Common (1000s)	<i>S. Dublin</i> endemic cattle in West and W. <i>S. Typhimurium</i> common/sporadic pigs & cattle, less common in sheep. Septicaemia, diarrhoea, abortions
Scabies	<i>Sarcoptes scabiei</i> , species adapted strains	Various species	Direct	Uncommon as a zoonosis	Endemic, sporadic diagnoses. Skin
Streptococcal sepsis	<i>Streptococcus suis</i>	pigs	direct contact, meat, aerosol	Rare (1)	Yes, fairly common in pigs (mainly <i>S.suis</i> type 2 but other serotypes also occur). CNS signs/polyarthritis/septicaemia

Streptococcal sepsis	<i>Streptococcus zooepidemicus</i>	horses, cattle	direct contact, milk	Very rare (0)	Sporadic
Toxocariasis	<i>Toxocara canis/cati</i>	dogs, cats	direct contact	Rare (1)	Endemic and common depending on use of anthelmintics
Toxoplasmosis	<i>Toxoplasma gondii</i>	cats, ruminants	ingestion of faecal oocysts, meat, cat litter	Uncommon (106)	Common cause of abortion in sheep and goats
Yersiniosis	<i>Y. pseudotuberculosis</i>	Many mammalian and wildlife spp, birds, reptiles	Direct contact, foodborne	Uncommon (50, mostly <i>Y. enterocolitica</i>)	Endemic in many species
	<i>Y. enterocolitica</i>	Livestock and wildlife spp,	Faecal-oral, foodborne		
Zoonotic diphtheria	<i>Corynebacterium ulcerans</i>	cattle, farm animals, dogs, cats	direct contact, milk	Rare (2)	Probably endemic in cats and dogs. Nasal discharge/inapparent carriage

NB this list includes those zoonotic diseases/ organisms considered to be of greatest significance and is not intended to be exhaustive

* indicates disease notifiable in animals (such diseases are primarily dealt with by Animal Health)

\$ Salmonellosis is reportable in animals under Zoonoses Order

Key for frequency of human cases:

Very rare < 1 case/year

Rare <10 cases/year

Uncommon <100 cases/year

Moderate <500 cases/year

Common 500+ cases/year

HPA Website www.hpa.org.uk

Defra website www.defra.gov.uk

Appendix 2: Table of Zoonotic Diseases and Organisms Exotic to England & Wales

Disease	Organism	Main reservoirs	Usual mode of transmission to humans	Diagnosed cases in humans (no. cases in 2007)	Occurrence in animals/ endemic
Alveolar hydatid*	<i>Echinococcus multilocularis</i>	Small rodents, foxes, dogs, cats	Ingestion of eggs excreted by carnivore	Not known in UK	Not known in UK
Avian influenza* (HPAI strains only)	HP strains of Influenza A viruses H5 & H7	poultry, ducks, wild birds	direct contact	Very rare (0)	Rare and sporadic
Equine viral encephalomyelitis*	Western, Eastern and Venezuelan Equine Encephalitis viruses	Horses	Biting arthropods	Very rare (one imported case 2007)	Not known in UK
Equine morbillivirus (Hendra)*	Hendravirus	Fruit bats	Direct contact with body fluids of infected horses	Not known in UK	Not known in UK
Glanders*	<i>Burkholderia mallei</i>	horse, donkey, mule	direct contact	Not known in UK	Not known in UK
Hantavirus syndromes	Hantaviruses	rodents	aerosol	Not known in UK	Not known in UK
Newcastle disease	ND virus	poultry	Inhalation, aerosols	V rare	Rare
Plague	<i>Yersinia pestis</i>	rats and their fleas	flea bite	Not known in UK	Not known in UK
Relapsing fever (only tick-borne form is possibly zoonotic)	<i>Borrelia</i> spp	Small mammals	Tick bite (soft ticks)	Not known in UK	Not known in UK
Rift valley fever*	Rift Valley fever virus	cattle, sheep, camels and goats	Direct contact, ingestion, mosquito bites	Not known in UK	Not known in UK
Trichinellosis*	<i>Trichinella spiralis</i>	pigs, wild boar	pork products	Very rare, imported (0)	Not known in GB
Tularemia	<i>Francisella tularensis</i>	rabbits, wild animals, environment, ticks	direct contact, aerosol, ticks, inoculation	Not known in UK	Not known in UK
Vesicular stomatitis	Vesicular stomatitis virus (2 distinct serotypes, Indiana & New Jersey)	Cattle, pigs and horses	Direct contact (low level zoonosis)	Very rare (0)	Not endemic in UK
Viral haemorrhagic fevers	Various including Lassa, Ebola, Marburg, and Crimean-Congo viruses	Various including multi-mammate rats, primates, bats, ostriches, livestock, rabbits/hares	Various, including direct contact, rodent urine, tick bites	Very rare, imported (0)	Not known in UK
West Nile fever*	West Nile virus	wild birds, mosquitoes	mosquito bite	Not known in UK	Not known in GB

NB This list highlights some potential threats and is not considered to be exhaustive

Appendix 3: Relevant Legislation (covering statutory and non-statutory Zoonoses)

Animal Boarding Establishments Act 1963
Animal By-Products Regulations 2005
Animal Health Act 1981(as amended)
Anthrax Order 1991
Avian Influenza and Influenza of Avian Origin in Mammals (England) Order 2006
Breeding of Dogs Act 1973
Breeding and Sale of Dogs (Welfare) Act 1999
Brucellosis (England) Order 2000
Brucellosis (England and Wales) Order 1981 (as amended) (current Welsh legislation)
Control of Substances Hazardous to Health (COSHH) Regulations 1999
Dogs Act 1906
EC Regulation 853/2004
Dangerous Wild Animals Act 1976
Environmental Protection Act 1990
Food and Environment Protection Act 1985
Food Safety Act 1990
The Food Hygiene (England) Regulations 2006 (and Amendment 2007)
Health and Safety at Work etc Act 1974
Health and Services and Public Health Act 1968
Health and Social Care Act 2008
Infectious Diseases of Horse Order 1987
Litter (Animals Droppings) Order 1991
Pet Animals Act 1951 and 1983
Prevention of Damage by Pests Act 1949
Rabies Control Order 1974
Rabies (Importation of Dogs, Cats and other Mammals) Order 1974 (as amended) –
Presently Under Review
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995
Riding Establishments Act 1964 and 1979
Specific Risk Materials Regulations 1997
Specified Animal Pathogens Order 2008
Specified Diseases (Notification and Slaughter) Order 1992
The Water Supply (Water Quality) Regulations 2000
Transmissible Spongiform Encephalopathies (Wales) Regulations 2006
Transmissible Spongiform Encephalopathies (England) Regulations 2008
Tuberculosis (England) Order 2007
Tuberculosis (Wales) Order 2006
Zoo Licensing Act 1981
Zoonoses Order 1989
EU Zoonoses Directive 2003/99/EC.
The Public Health (Infectious Diseases) Regulations 1988
Public Health (Control of Disease) Act 1984
Zoonoses (Monitoring) (England) Regulations 2007 (equivalent legislation in Scotland and Wales to implement EU Directive 2003/99/EC).

Appendix 4: Zoonotic diseases reported on by the VLA under Veterinary Investigation Diagnosis Analysis (VIDA)

Babesiosis
<i>Brachyspira pilosicoli</i>
Brucella in marine mammals
Campylobacter fetopathy
Chlamydiosis (<i>C. psittaci</i>)
<i>Chlamydophila abortus</i> fetopathy
<i>Corynebacterium pseudotuberculosis</i> (CLA)
Cryptosporidiosis
Cysticercosis
<i>Dermatophilus</i> infection
Erysipelas
Fasciolosis
Hydatidosis
Leptospirosis (all categories)
Listeriosis (all categories)
Louping ill
Orf (parapoxvirus)
<i>Pasteurella multocida</i> /Pasteurellosis
Pseudocowpox (parapoxvirus)
Q Fever (<i>Coxiella burnetii</i>)
Red Mite (<i>Dermanyssus galinae</i>)
Ringworm
Salmonella
<i>Sarcoptes scabiei</i> infection
Streptococcal infection (excl. mastitis)
(Swine influenza)
Toxoplasmosis (incl. fetopathy)

The Veterinary Investigation Diagnosis Analysis database contains a record of every submission made to VLA Regional Laboratories and Scottish Agricultural College (SAC) Disease Surveillance Centres (DSCs) in Great Britain. For more information, see http://www.defra.gov.uk/vla/reports/rep_vida.htm

Appendix 5: Incident or Outbreak Control Team

Suggested terms of reference of the Incident or Outbreak Control Team (OCT)

- 1 To review the evidence for an outbreak and the results of epidemiological, microbiological and other analytical investigations
- 2 To identify the population at risk and to institute additional information gathering measures
- 3 To decide on measures to control the outbreak and protect the other members of the community, including arrangements for the commitment of personnel and resources considered necessary
- 4 To monitor the implementation and effectiveness of the measures
- 5 To make on-going arrangements for informing the public and media as appropriate
- 6 To liaise with other agencies and stakeholders as necessary
- 7 To decide when an outbreak has finished
- 8 To prepare a report of the outbreak containing recommendations for further action
- 9 To carry out a formal debrief and publish a report of the outbreak together with any lessons identified

Outbreak Control Team (OCT) establishment and organisation

Membership of the OCT is outlined in section 6.3.2. The OCT can co-opt other members as and when necessary. In the event that an outbreak crosses administrative boundaries, the CCDC and an EHO from the district where the outbreak originated will usually take the lead roles. The relevant officers from other affected districts will be involved in meetings and decision taking.

Arrangements for the OCT

Full secretarial services to support the Team and location of meetings will be determined by the chair. There will be an agenda for each meeting and minutes, which will remain confidential and record all decisions taken. The agenda will be determined by the Chairman of the OCT.

Record keeping

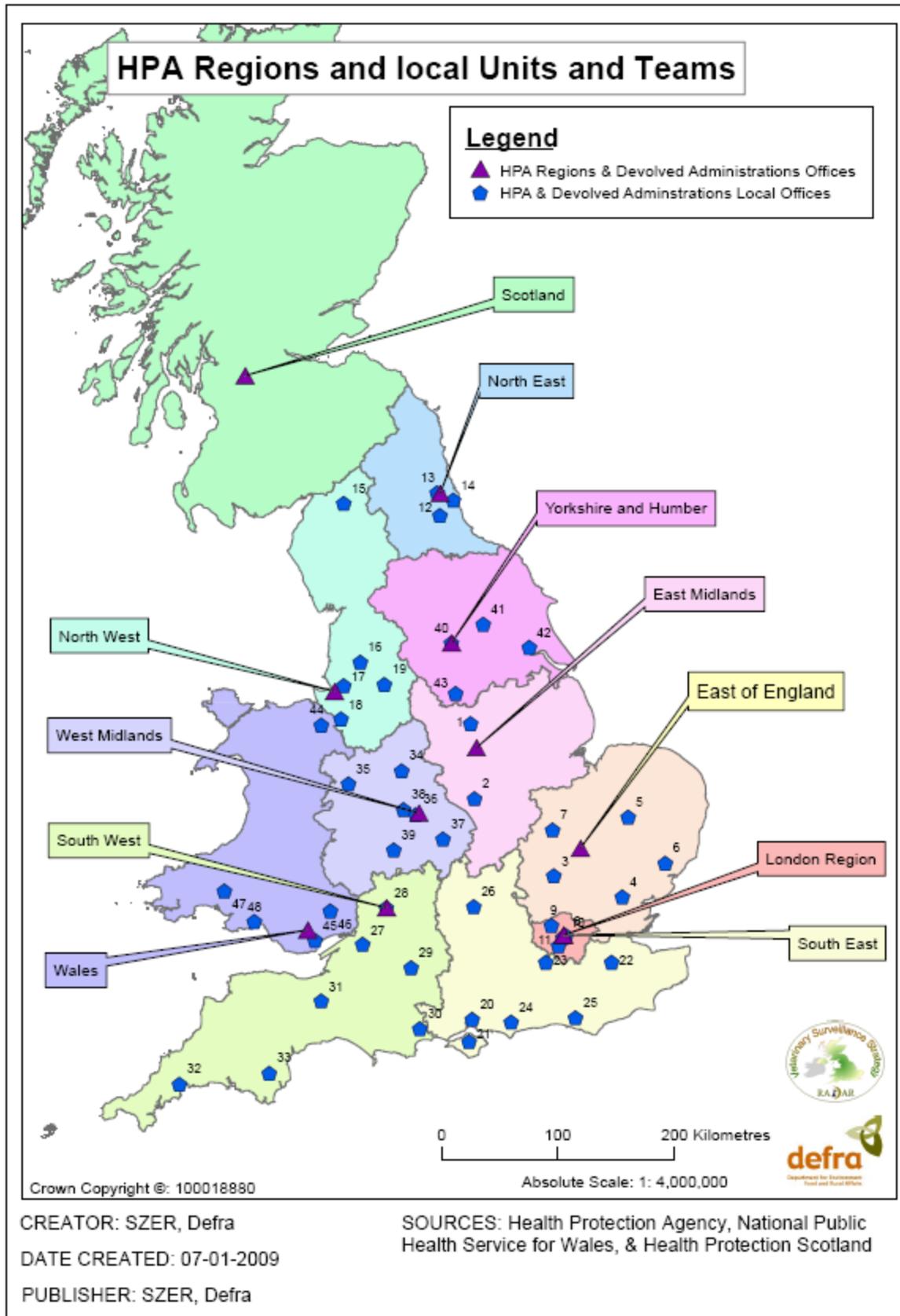
A log should be maintained from the beginning of the outbreak to collect all data for future reference, and for all correspondence and minutes of meetings etc. A nominated person will be responsible for documentation of all the events and information related to the outbreak plan. Interim reports will be produced as necessary.

Training and review

Agencies involved in zoonotic incidents should organise joint exercises to test their plans. These exercises may be “desk top”, communication only or based on a simulated incident. It is the responsibility of the HPA and partner organisations to review their plans on an on-going basis. Any proposed changes or amendments to plans will be formally notified in writing to the key participants of the team immediately.

Appendix 6: HPA Regions and local Units and Teams

(see overleaf for contact information)

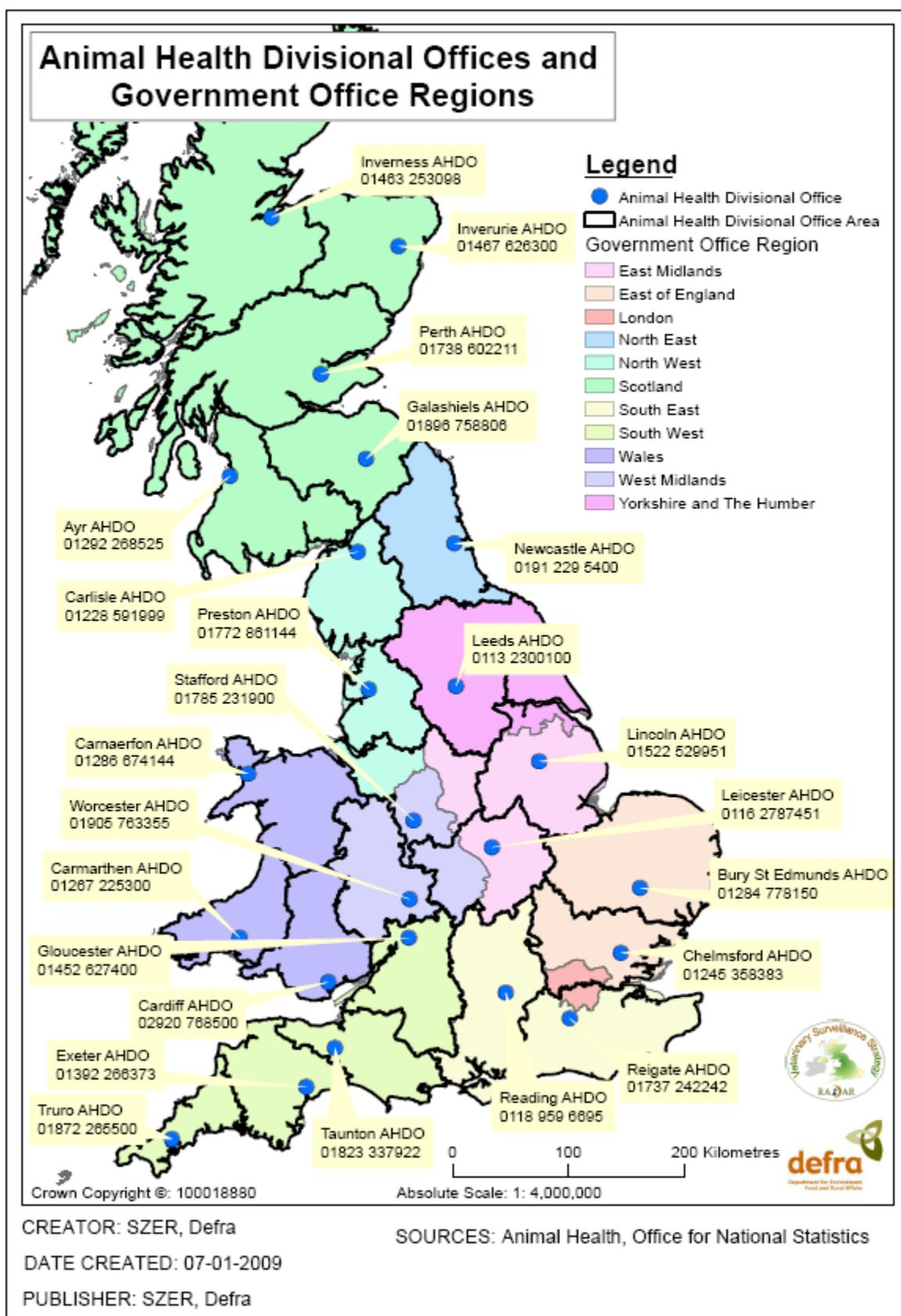


Contact details for Health Protection Teams

	Local Health Protection Unit	Office or Team Name	Telephone
1	East Midlands North		01623 819000
	East Midlands North	Lincolnshire Office	01476 514699
2	East Midlands South		0116 263 1400
3	Bedfordshire & Hertfordshire		01462 705300
4	Essex		0845 155 0069
5	Norfolk, Suffolk & Cambridge	Norfolk Office	01842 767757
6	Norfolk, Suffolk & Cambridge	Suffolk Office	01473 329583
7	Norfolk, Suffolk & Cambridge	Cambridgeshire Office	01480 398607
8	North East & North Central London		020 7759 2860
9	North West London		020 8327 7181
10	South East London		020 3049 4280
11	South West London		020 8812 7850
12	North East	County Durham and Tees Valley	0191 333 3372
13/14	North East	Northumberland, Tyne & Wear	0191 202 3888
15/16	Cumbria & Lancashire		01257 246450
17	Cheshire & Merseyside	Merseyside Health Protection Office	0151 290 8360
18	Cheshire & Merseyside	Cheshire Health Protection Office	0151 290 8360
19	Greater Manchester		0161 786 6710
20	Hampshire & Isle of Wight	Whiteley	0845 055 2022
21	Hampshire & Isle of Wight	Isle of Wight	0845 055 2022
22	Kent		01622 710161
23	Sussex & Surrey	Surrey	01372 824262
24	Sussex & Surrey	West Sussex	01243 770772
25	Sussex & Surrey	East Sussex	01273 403591
26	Thames Valley		0845 279 9879
27	Avon, Gloucestershire & Wiltshire	Avon Health Protection Team	0117 900 2620
28	Avon, Gloucestershire & Wiltshire	Gloucestershire Health Protection Team	0145 382 9650
29	Avon, Gloucestershire & Wiltshire	Wiltshire Health Protection Team	0138 081 4000
30	Dorset & Somerset	Dorset Health Protection Team	0120 285 1272
31	Dorset & Somerset	Somerset Health Protection Team	0182 328 7817
32	South West Peninsula	Cornwall & Isles of Scilly Team	0172 662 7881
33	South West Peninsula	Devon Health Protection Team	0180 386 1833
34/35	West Midlands North		0178 522 1158
36	West Midlands East	Birmingham and Solihull Unit	0121 255 0800
37	West Midlands East	Coventry and Warwickshire Unit	0192 649 3491
38/39	West Midlands West		01562 756300
40	West Yorkshire		0113 284 0606
41	North Yorkshire & Humber	North Yorkshire Team	0190 456 7675
42	North Yorkshire & Humber	Humber Team	0148 267 2171
43	South Yorkshire		0114 242 8850
44	North Wales	Preswylfa	01352 803234
45	South East Wales	Cardiff Office	029 2040 2478
46	South East Wales	Gwent Office	01495 332219
47	Mid & Mid West Wales	Carmarthen Office	01267 225000
48	Mid & Mid West Wales	Swansea Office	01792 607387

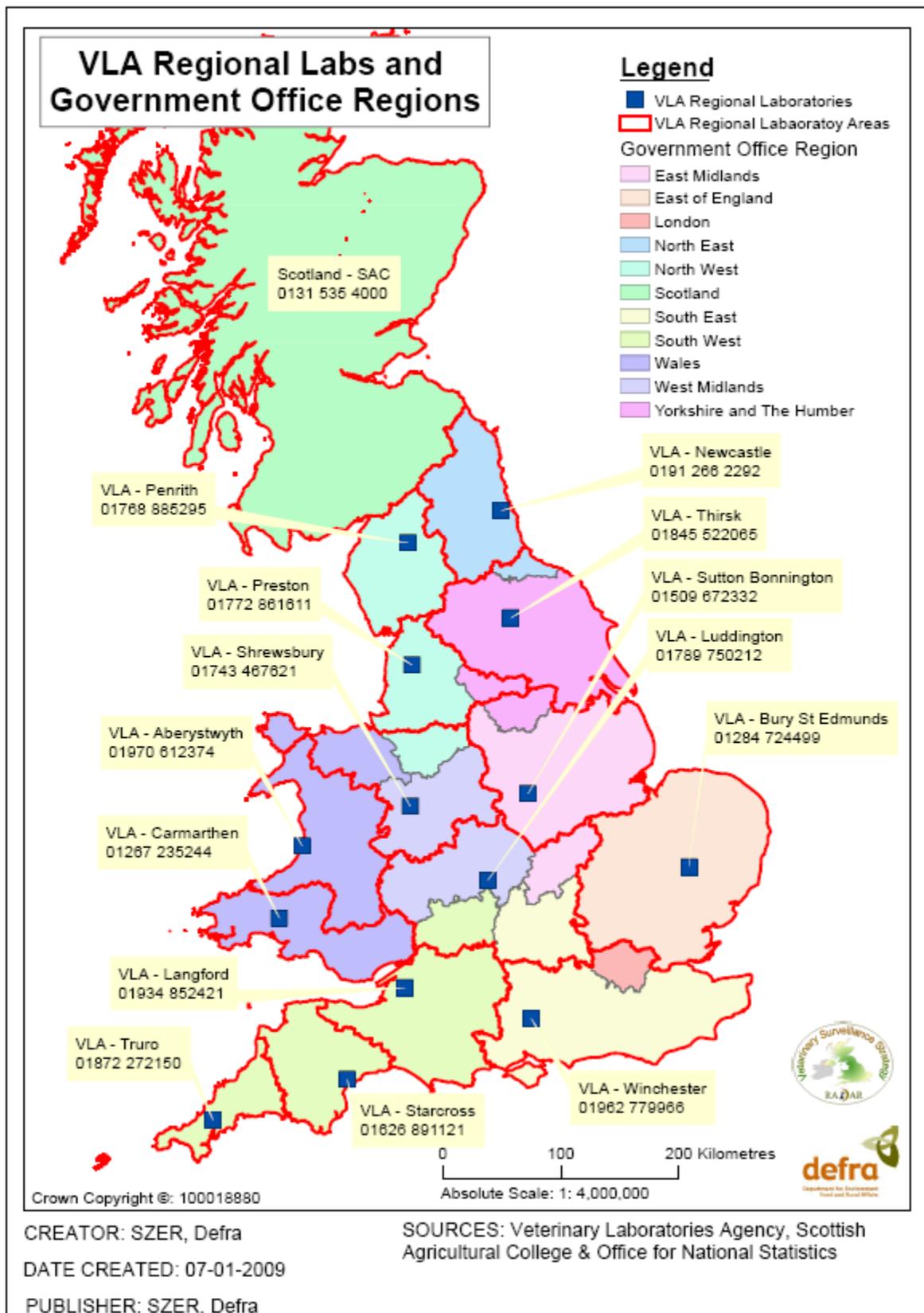
Correct at date of publication. Please check the Postcode Search function on the homepage of the HPA website (www.hpa.org.uk) for changes.

Appendix 7: Animal Health Divisional Offices and Government Office Regions



Correct at date of publication. Please check the Animal Health website for changes
<http://www.defra.gov.uk/animalhealth/about-us/contact-us/search/>

Appendix 8: VLA Regional Labs and Government Office Regions



Correct at date of publication. Please check the VLA website for changes
http://www.defra.gov.uk/vla/vla/vla_map.htm