ONE HEALTH

One Health in action: the work of the HAIRS group

The Human Animal Infections and Risk Surveillance (HAIRS) group is a collaboration between a number of human and animal health organisations within the UK government. The group aims to provide a ‘joined-up’ response to emerging diseases that threaten the health of people or animals. Here, Dilys Morgan, who chairs the group, discusses its work, highlighting its response to Schmallenberg virus, and shows how a One Health approach can improve government responses to potential crises.

THE BSE Inquiry report, published in October 2000, was a seminal publication that demonstrated the advantages of a One Health approach. The BSE Inquiry was set up in 1998 to review the emergence and identification of BSE and new variant Creutzfeldt-Jakob disease (vCJD) in the UK, and the action taken in response to it, and to reach conclusions on the adequacy of that response. It describes the Government’s handling of the BSE crisis and runs to 16 volumes.

The report remains as much a compulsive read today as it was when it was published. It outlines failures in liaison across government; problems in communication between experts, officials and the public; the misunderstanding of advice versus definitive precautionary measures; delays in introducing policy as well as missed opportunities; and lessons on perception and explanation of risk. Since then, UK Government collaborations aimed at managing threats to animal and human health have become more routine and better established (Reynolds and Donaldson 2005). The publication of ‘Getting ahead of the curve’ (Department of Health 2002) by the Chief Medical Officer in 2002 set out an infectious diseases strategy for England which included a national expert panel to assess the threat from new and emerging infectious diseases. The remit of the National Expert Panel on New and Emerging Infections included identifying emerging and potential infectious threats to public health, both nationally and internationally, and placing emerging infections in the wider clinical and public health context. Since it has been estimated that 75 per cent of emerging infections are zoonotic (Taylor and others 2001), it was felt that assessing the zoonotic potential of animal infections was crucial. Therefore, in 2004, the then Health Protection Agency (later to become Public Health England) established the Human Animal Infections and Risk Surveillance (HAIRS) group, a multiagency, multidisciplinary cross-government UK horizon scanning and risk assessment group. The group has been described as a major One Health initiative (Heymann and Dar 2014) and has also been cited as an example of how the fields of veterinary and human medicine can effectively work together on risk assessment for emerging health threats (Lightfoot and others 2013).

The HAIRS group has met every month since February 2004 and is chaired by Public Health England. It acts as a forum to identify and discuss new and emerging infections, especially at the human-animal interface, and plays a pivotal role for human and animal health by contributing to national policy development and operational responses on zoonoses. The group is recognised as providing a multidisciplinary focal point of referral for potential zoonotic incidents – especially if the subject does not fit in existing advisory committee structures.

Members include representatives from a range of government departments and agencies, as shown in the box below. The members have developed a close working relationship, and each has their own professional contacts, collaborators and networks.

Members of the HAIRS group

Dilys Morgan (chair)
What does the group do?

Horizon scanning
Horizon scanning is carried out by Public Health England by the systematic examination of a wide range of formal and informal reports on infectious incidents in animal and human populations to identify potential hazards, such as new or unusual syndromes or infections in animals, or increases in endemic disease. In addition, each member of the group highlights potential hazards they are aware of, either through their horizon scanning or routine activities. These are discussed by the group either at the monthly meeting or by e-mail if considered more immediate.

Risk assessment
If a potentially zoonotic incident or trend is reported, it may be apparent that it poses a negligible risk to public health. If there is any uncertainty, the event is monitored or more information is sought to better assess the incident.

If it is considered that there may be a threat to UK public health, a formal assessment is carried out by the group, with expert input as necessary. The risk assessment procedure used depends on the issue under consideration and includes risk statements or risk algorithms. The assessments are qualitative and are used to rapidly communicate risk in a hierarchy of robust and consistent terms.

The quality of evidence in the sources of information underpinning the assessment is graded to allow the degree of confidence in the estimation of risk to be recorded. This reduces the subjective nature of qualitative risk assessments, particularly in instances for which limited information is available, as is often the case for new or emerging infections. Having a robust system in place for assessing threats in an objective way using evidence-based methodology supports decision-making and makes actions, or lack of them, justifiable. All members of the group sign up to final agreed risk assessments (Public Health England 2014).

Risk management
The group can reduce risks by identifying, advising or implementing control measures, either by using expertise within the group or network contacts or by referral to appropriate groups for risk management action.

Risk communication
Communication is a key aspect of the group’s work, and a monthly summary is produced that includes notable events of public health significance (Public Health England, Defra and AHVLA 2014). Members are responsible for informing colleagues within their departments/agencies of any key issues discussed, including qualitative risk assessments. The group also ensures that other departments/agencies are informed of potential risks as necessary. Members agree on joint statements and other outputs, such as question and answer documents, guidance documents, public information documents, and so on.

Schmallenberg virus: a case study
During the summer of 2011, horizon scanning revealed reports of a mild disease associated with fever, poor general condition, anorexia and reduced milk yield in dairy cows in western Germany. Similar outbreaks were also reported in the Netherlands, where cases also had severe diarrhoea. Clinical signs disappeared after a few days and the animals appeared to fully recover.

In November 2011, a novel virus obtained from the affected cattle was identified by the Friedrich-Loeffler Institute in Germany and provisionally named Schmallenberg virus (SBV) (Hoffmann and others 2012).

In December 2011, with the onset of the lambing season in Europe, reports emerged of unexpected congenital malformations in lambs, goats and, occasionally, calves in the Netherlands and then Germany. SBV was isolated from the affected animals.

Defra assessed the risk of importation from consignments of cattle from affected areas. In addition, modelling suggested that midges (the proposed vector) could have arrived in parts of east and south-east England and surveillance of livestock was therefore put in place in these regions.

The HAIRS group monitored these developments with great interest and, early on, considered and questioned the zoonotic implications. Based on virological opinion within the group and using other expert input, it was considered unlikely that SBV was zoonotic, but human infection could not be excluded.

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During this time, assessments produced by the European Centre for Disease Prevention and Control and the National Institute of Public Health and the Environment (RIVM) in the Netherlands agreed with the HAIRS group’s summary conclusion (European Centre for Disease Prevention and Control 2011, RIVM 2011).

On January 23, 2012, the AHVLA identified SBV via PCR on four farms in Norfolk, Suffolk and East Sussex following reports of unusual malformations in lambs. Four days later, using the relationships established in the HAIRS group, surveillance of potentially exposed occupational groups was established. Workers exposed to confirmed or suspected animal cases of SBV were given an information sheet prepared by the AHVLA and the Health Protection Agency. This advised that if they developed fever (temperature in excess of 38°C) within two weeks of contact with malformed animals or their birth products, they should contact their local Health Protection Unit. The Health Protection Units would then gather more information using a short questionnaire and liaise with the worker’s doctor for assessment and blood sampling. Samples were tested for acute infection by PCR and stored awaiting a suitable antibody test. It was made clear to the workers that current evidence did not suggest that SBV caused human disease and that testing was being carried out as a precautionary measure.

More information was emerging during this time and members of the group frequently discussed SBV with veterinary and medical technical expert colleagues in the UK and Europe, and fed back to the group. It became apparent that, although the general human population in the risk area could have been exposed by biting midges in the summer and autumn of 2011, occupational groups were at risk of being exposed to higher titres of virus in a variety of tissues from affected animals around parturition. Therefore, in the absence of an
antibody test, surveillance of occupational groups would have been more likely to detect transmission if it were occurring.

It was not known how long SBV had been circulating in Europe, but given that the affected European countries had good surveillance in place for bluetongue virus, it appeared to be a new disease. Early on in the incident, the HAIRS group, in collaboration with AHVLA experts dealing with the situation, developed and agreed on key public health messages, which were communicated across government in the UK, to stakeholders and the public. In addition, although

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many uncertainties and gaps in knowledge remained and the situation was rapidly evolving, the HAIRS group issued and circulated the following risk statement:

‘The viruses closely related to SBV produce a similar clinical picture in livestock but have not been shown to cause disease in humans. It is therefore currently considered unlikely that SBV is zoonotic. In addition, humans have not yet detected acute human disease and it is therefore currently considered unlikely that SBV is zoonotic. In addition, early risk assessments were based on little scientific evidence. However, the HAIRS group provided the ability to rapidly assess zoonotic potential and implement surveillance of occupationally exposed groups and give a ‘joined up’ message about SBV across government.

**Why is the group effective?**

The HAIRS group has dealt with a wide range of infections with public health potential and SBV was just one of many it has considered. Other incidents include:

- Progressive inflammatory neuropathy among pig workers in the USA;
- Viral infections including Ljungan virus, hantavirus, West Nile virus, hepatitis E, and filoviruses in bats;
- Congenital tremor syndrome in pigs;
- Mycobacterium bovis infection in alpacas, cats and other non-bovine species;
- The Pet Travel Scheme and risks from rabies and *Echovirus multisecularis* (and beavers!);
- Vectorborne diseases: ticks/mosquitoes;
- Gastro rufa fish and potential infectious threats.

The group undoubtedly improves alerts, assessments and communications not only within Public Health England, but across government and internationally. Collaborative relationships are best developed not across government and internationally. Collaborative relationships are best developed by these relationships are maintained. The group has been fortunate to have high level support. It is always a balance that these relationships are maintained. The group has been fortunate to have high level support. It is always a balance between members being senior enough to be able to represent an organisation, and having sufficient time to contribute effectively to the group. The group has been very fortunate, especially given the cuts in public sector budgets in the UK.

Internationally, the One Health agenda tends to be dominated by veterinarians, and one of the features of the HAIRS group is the equal roles played by human and animal health practitioners. The working relations established in the group carry through to many of the policy and operational aspects of zoonoses and infections at the human-animal interface.

Working in the field of risk assessment can be hazardous in itself and damaging for those involved. This was demonstrated by the BSE Inquiry (BSE Inquiry 2000). With this in mind, the group has established a systematic approach to its work and early on agreed terms of reference, ensuring that discussions and decisions are astutely recorded, while also ensuring there is effective communication as well as transparent risk assessment processes.

Egos, hidden agendas and professional superiority are often features of working groups, but such behaviour is rarely exhibited in HAIRS. Why is that and why does the HAIRS group work so well? I’m not sure, but feel that the multidisciplinary nature of the group and the personalities involved play a major role.

**References**


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