

> SURVEILLANCE OF INFECTIOUS ANIMAL DISEASES IN SOUTHEAST ASIA

## Promoting the multiplicity of information networks

MURIEL FIGUIÉ, MARISA PEYRE, AURÉLIE BINOT

The surveillance of animal diseases has been the subject of numerous national and international initiatives further to the emergence, or re-emergence, of human diseases of animal origin.

Noting that collaboration between stakeholders involved in surveillance was still insufficient, the international organisations have stressed the importance of harmonising data collection tools and mobilising stakeholders through participatory methods, education and communication.

However, by focusing on technical constraints and individual motivations, these policies disregard the strategic role of information and potential conflicts of interest. Moreover, they ignore the practices of the many stakeholders in the field, who convey disease information within non-conventional surveillance networks.

Hence the proposal to take these networks into account, without compromising the diversity of their objectives and operations, in order to make the surveillance of animal diseases more effective.

The emergence or re-emergence of human diseases of animal origin – Ebola, SARS (severe acute respiratory syndrome), avian influenza H5N1 virus, etc. – has alerted the international community and the public health authorities to the persistent threat of infectious disease.

Over the last 20 years, numerous international, regional and national initiatives have therefore been taken in order to consolidate what is recog-

nised as a major tool for early detection and rapid response to infectious animal diseases: animal health surveillance. Surveillance is defined by the OIE (World Organisation for Animal Health) as the collection, collation and analysis of information related to animal health, and the broad and timely dissemination of this information in order to control animal diseases at different levels, from local to international. It enables safe trade in animal products according to World

perspective

Through *Perspective*, CIRAD provides the opportunity to explore new avenues for discussion and action based on research, without presenting an institutional position.

Trade Organization sanitary and phytosanitary standards. In the case of zoonoses – diseases common to humans and animals, such as avian influenza – or animal diseases with zoonotic potential, surveillance makes it possible to take measures and to thereby anticipate public health problems.

## Improving surveillance

In spite of the attention and funding they have received from international cooperation, particularly in high-risk areas, the conventional surveillance systems set up by the public authorities are showing their limits: they remain fragmented between the different diseases, stakeholders and sectors of activity (human health, animal health, food safety, wildlife protection, etc.); information passed on to national and international decision-makers is limited or too slow; and disease information is still incomplete, as many epidemiological events are not subjected to any official report.

In order to improve the surveillance of animal diseases, the OIE, in connection with the other international organisations concerned (FAO, WHO, World Bank), advocates a stronger focus on collaboration between the stakeholders involved in surveillance. The first course of action is to harmonise information collection tools, in order to share databases on animal health and also on human health. These databases are compiled from various sources (veterinaries, laboratories, public or private hospitals, abattoirs, transnational information networks, etc.), at different levels (national, regional). The second course of action is to further mobilise stakeholders in the field, especially livestock farmers who do not systematically declare the diseases affecting their animals, so that they become “the first line of defence against infectious animal diseases”. To achieve this, the international organisations are calling for participatory surveillance, along with education and communication.

The goal of participatory surveillance is to provide a cost-efficient way of addressing the shortcomings of conventional surveillance services in remote areas or those with limited resources. It helps to promote the veterinary knowledge of local stakeholders, to identify high-risk behaviours and their determinants, and to avoid bias in conventional data collection methods. However, as acknowledged by the PENAPH (Participatory Epidemiology Network for Animal and Public Health), participatory surveillance is limited to consulting stakeholders, without involving them in decision-making; its intention is to

make livestock farmers “the eyes and ears of the veterinary services in remote areas”.

The goal of education and communication is to raise awareness, in the name of a common good, among a population or a group of stakeholders. To do so, they seek to correct the psychological and cognitive factors that determine the perceptions and attitudes of stakeholders and prevent their adherence to the biosecurity standards recommended by the veterinary authorities. This approach is based on the idea that good information is sufficient to guide individuals towards behaviour complying with these standards.

## Strengthening animal health policies

Although these actions help to remove certain constraints, they neglect others. By focusing on technical constraints (the format of data collection tools) and individual constraints (biased perceptions), they omit conflicts of interest. Indeed, information is a strategic resource: it prompts and conditions the choice of disease control measures. These measures are of general interest but are often locally restrictive (slaughter of animals, trade or export bans, etc.), and stakeholders may therefore choose not to share their animal health information.

Conflicts of interest may arise within a village community, between sectors of activity, between stakeholders in a given commodity chain, between countries or between international organisations. They are fostered by the differences that emerge when decisions must be made in a context of uncertainty, when the reference to the precautionary principle calls for rapid decision-making even though scientific knowledge is insufficient. They are also likely to occur when stakeholders use animal disease exceptional events to impose themselves or to make socio-political or economic changes. This is the case when the surveillance of animals is a cover for the surveillance of livestock farmers, or when the decisions it justifies serve broader purposes, such as the modernisation or relocation of livestock farming activities.

Furthermore, while participatory approaches or education may fill the information gaps where diseases are concerned, they tell us little about any action undertaken by farmers to manage these diseases. But, as shown by the research conducted by CIRAD in Southeast Asia (see box, p. 4), many farmers collaborate informally in animal health surveillance networks that operate outside the conventional surveillance systems, with varying degrees of autonomy.

> Sharing databases and mobilising stakeholders

> Taking into account conflicts of interest and action by livestock farmers

> Proximity, community or commodity chain networks

## Non-conventional networks...

In Vietnam and Thailand, for example, animal health information circulates among livestock farmers in the areas studied, revealing proximity, community or commodity chain networks. These non-conventional networks constitute collective action groups, founded on shared values and objectives: the same analysis of risk; a shared definition of “cases”; and specific decision-making tools. They may be interpreted as an attempt to improve or bypass a conventional system that is poorly adapted to the local context, or overly restrictive.

> A different prioritisation of risks

In Vietnam, although livestock farmers make a limited contribution to conventional animal health surveillance networks, they are active in non-conventional information networks at the communal level. In villages engaged in poultry farming, farmers inform one another, by moral obligation, of any disease outbreaks in their flocks. Their definition of cases prompting the dissemination of information differs from that of the authorities. For avian influenza, besides certain clinical signs, the non-conventional networks are mobilised when the mortality rate in poultry reaches between 15 and 40% in less than two days, whereas the conventional system sets this rate at 5%. This gap reveals a different tolerance of risk, depending on the interests and scale of analysis of those concerned. Moreover, in non-conventional networks, interventions are often aimed at minimising the possible effects of diseases within the network (through the sale of animals infected by or exposed to the disease, for example), whereas in the conventional system, they are designed to control or even anticipate the causes of disease and to limit their spread on a larger scale. In addition to farmers, other stakeholders may play a key role in these networks because of their professional activity (animal collectors, veterinary product retailers) or their social rank (village chief, local authority). The way these networks operate may therefore reveal power relations and issues that transcend animal health.

> Building bridges between conventional systems and non-conventional networks

In Thailand, many non-conventional networks have been identified and reflect a prioritisation of risks that differs from that of the conventional system. For poultry, networks of farmers circulate information mainly on rice-growing areas contaminated by pesticides, which are a threat to the health of the birds that visit these areas. However the conventional system concentrates, by its mandate, on the surveillance of infectious diseases, and has focused in recent years on avian influenza. For cattle and suids, farmers

ensure collective surveillance of diarrhoea and pneumonia, while the conventional system places the emphasis on foot-and-mouth disease. Some surveillance networks also function over long distances, and are linked to contract-based value chains; the technicians from the contracting company play an active part in information circulation and animal health management within the group of farmers under contract, but without any connection to the veterinary services in the conventional system.

## ... whose specificity must be taken into account

This multiplicity of non-conventional networks would benefit from recognition by the public health systems, especially in high-risk areas or sectors. Without idealising their operations or their effectiveness, they have several advantages; these go beyond the goal of filling the gaps in public veterinary services, or making farmers an effective means of informing and executing control policies.

The first advantage is that identifying these networks as collective action groups helps to pinpoint the social dynamics that could support participatory approaches that are more dependent on collaboration than on consultation. In Vietnam and Thailand, the stakeholders in geographical or sector-based networks could thus be given an official role in the conventional animal health surveillance systems – the terms of which would be negotiated according to the context –, as is the case in many countries (such as the *Groupements de Défense Sanitaire*, or animal health protection groups, in France). The second advantage is that understanding the operating rules of these networks, which share values and goals, provides insights into collective representations of risks, and makes it possible to move beyond psychological or cognitive approaches, whose limitations have been pointed out, and to take into consideration the declared interests of livestock farmers. In Thailand, this could translate into joint programmes for the management of animal health risks that integrate both the surveillance of infectious diseases in poultry and the risks of environmental intoxication, to which farmers are sensitive. The third advantage is that analysing the attempts of non-conventional networks to adapt conventional systems or to bypass them sheds light on the obstacles to collaboration between stakeholders involved in surveillance. Thus, in Vietnam and Thailand, the creation of a rapid information system on diseases, similar to price information systems, would

## A few words about...

**Muriel FIGUIÉ,**

a sociologist in the MOISA unit ([umr-moisa.cirad.fr/](http://umr-moisa.cirad.fr/)),

**Marisa PEYRE,**

a vaccinologist and epidemiologist in the AGIRs unit, and

**Aurélie BINOT,**

an anthropologist and geographer in the AGIRs unit ([ur-agirs.cirad.fr/](http://ur-agirs.cirad.fr/)),

have been working together for several years on the management of animal health and the assessment of policies and programmes for the surveillance and control of animal diseases and zoonoses in Asia, Africa and the Mediterranean region.

[muriel.figuie@cirad.fr](mailto:muriel.figuie@cirad.fr)

[marisa.peyre@cirad.fr](mailto:marisa.peyre@cirad.fr)

[aurelie.binot@cirad.fr](mailto:aurelie.binot@cirad.fr)

enable livestock farmers not only to inform the official systems, but also to benefit from the information disseminated. The final advantage is that since the networks are often the first to detect new diseases, even before the public veterinary services, it is interesting to analyse the procedure for this detection, which involves more than just the transmission of information. In Vietnam, for instance, the rapid sale by farmers of diseased or exposed poultry in the case of a new disease points to the need to develop surveillance in sensitive commodity chains rather than in a predetermined geographical area.

The goal is not therefore to standardise these highly diverse networks, but to build bridges between them through joint actions, and to create spaces for negotiation with a view to future collaboration. Indeed, the differences between networks cannot be reduced by the

authority of technical-scientific discourse or by the reference to a supposed common good. Developing collaborations of this kind implies identifying networks, analysing their operating rules, which may or may not be formalised, and assessing their performance in relation to external criteria (international sanitary standards laid down by the OIE) and internal criteria (the expectations of participating stakeholders).

In a context in which health risks are increasingly global and intersectoral, and in which the watchword is “good governance”, the challenge is to bring a growing number of increasingly diverse stakeholders to collaborate around a common goal. The knowledge produced by research can accompany the reconfiguration of surveillance groups, of their practices and relations, in order to facilitate these collaborations. <

This issue of *Perspective* draws on the results of projects conducted by CIRAD in partnership with national and international research institutes, as part of the GREASE Research and training platform in partnership (Management of emerging risks in Southeast Asia, <http://www.grease-network.com/>). The main projects are the following: **Gripavi** (Research on the ecology and epidemiology of avian influenza in developing countries), financed by the French Ministry of Foreign and European Affairs (2007-2011) (<http://gripavi.cirad.fr/>); **Risks and emerging diseases**, financed by CIRAD (2010-2013) (<http://atp-emergence.cirad.fr/>); and **Revasia** (Research for the evaluation of animal health surveillance in Southeast Asia), financed by the French Ministry of Agriculture, Food and Forestry (Directorate for Food) in 2009 and 2010, then by the Agence Française de Développement (2010-2013) (<http://revasia.cirad.fr/>).

This multidisciplinary research associates the veterinary and social sciences. It has led to several publications, including:

Delabouglière A., Antoine-Moussiaux N., Phan D.T., Dao C.D., Nguyen T.T., Pham T.T.H.,

Truong D.B., Nguyen N.T.X., Vu D.T., Nguyen V.K., Le T.H., Kasemsuwan S., Thatont D.S., Binot A., Duboz R., Roger F., Peyre M., 2013. Impact of social and economical constraints on the performances of Highly Pathogenic Avian Influenza surveillance systems in Vietnam and Thailand. *In Proceedings of Options for the Control of Influenza VIII*, Cape Town, South Africa, 5-10 Sep. 2013. [http://revasia.cirad.fr/publications/communications\\_et\\_posters](http://revasia.cirad.fr/publications/communications_et_posters)

Desvaux S., Figuié M., 2011. Formal and informal surveillance systems. How to build bridges? *Bulletin de l'AEEMA*, n° 59-60, p. 352-355. [http://agents.cirad.fr/pjjimg/muriel.figuie@cirad.fr/DesvauxFiguie\\_ICAHS\\_2011\\_AEEMA.pdf](http://agents.cirad.fr/pjjimg/muriel.figuie@cirad.fr/DesvauxFiguie_ICAHS_2011_AEEMA.pdf)

Figuié M., 2013. Towards a global governance of risks: international health organisations and the surveillance of emerging infectious diseases. *Journal of Risk Research*, DOI: 10.1080/13669877.2012.761277, p. 1-15 <http://www.tandfonline.com/doi/pdf/10.1080/13669877.2012.761277>



perspective

**Editor:** Patrick Caron, Director General in charge of Research and Strategy

**Coordination:** Corinne Cohen, Department for Scientific and Technical Information

**Translation:** Anna Kiff

**Graphic design:** Patricia Doucet, Communication Service

**Distribution:** Christiane Jacquet, Communication Service

**Email:** [perspective@cirad.fr](mailto:perspective@cirad.fr)

[www.cirad.fr/publications-ressources/edition/perspective-policy-brief](http://www.cirad.fr/publications-ressources/edition/perspective-policy-brief)

## FIND OUT MORE

Domenech J., Bonnet P., Renard J.-F., 2004. Nécessité pour la recherche de soutenir l'émergence de systèmes de santé animale non conventionnels. *Revue scientifique et technique de l'OIE*, 23(1): 375-382.

Horby P.W., Pfeiffer D. & Oshitani H., 2013. Prospects for emerging infections in East and Southeast Asia 10 years after Severe Acute Respiratory Syndrome. *Emerging Infectious Diseases* 19: 853-860.

Morse S., 2012. Public Health Surveillance and Infectious Disease Detection. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 10: 6-16.

Jost C.C., Mariner J.C., Roeder P.L., Sawitri E. & Macgregor-Skinner G.J., 2007. Participatory epidemiology in disease surveillance and research. *Revue scientifique et technique de l'OIE*, 26(3): 537-549.