



Increasing awareness of zoonotic diseases among health workers and rural communities in Southeast Asia

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More than 6 out of 10 human infectious diseases come from animals (zoonoses).¹ Southeast Asia is considered one of the hotspot areas for zoonotic disease emergence. The combination of rapid growth of economies and human population has created favourable conditions – livestock intensification, disrupted wildlife habitats and changes to land use – which are ideal for zoonotic disease emergence.

Many people in Southeast Asia are familiar with avian influenza or severe acute respiratory syndrome (SARS) because these diseases emerged within the region and thus received a lot of attention due to outbreaks or threat of outbreaks. Yet not many people would be able to tell you much about long-established zoonoses such as brucellosis or leptospirosis, when in fact these diseases remain quite common across the region.

Zoonotic diseases tend to be most prevalent in places where awareness about the disease, prevention and control are low. Lack of awareness, frequently in combination with conditions of poverty, means that risky behaviours persist and populations remain vulnerable. Risky behaviours related to animal management and food consumption can put communities at risk for zoonoses.

Public awareness and education efforts can help in tackling zoonoses. For the past five years, EcoZD (see definitions), an action research project on zoonotic diseases has been working in six countries in Southeast Asia. Each country team consisted of local individuals and institutions with knowledge of Ecohealth (see definitions), representing multiple disciplines carrying out research on zoonotic emerging infectious diseases. In a number of countries, the teams started by evaluating the familiarity of local communities, health workers and occupational groups with zoonoses.

This brief highlights what the teams learned about risky behaviours and practices in local communities and strategies they developed to raise awareness.

EcoZD, also known as the Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in Southeast Asia project was an initiative funded by the International Development Research Centre (IDRC) and coordinated by the International Livestock Research Institute (ILRI). The project worked in Cambodia, China, Indonesia, Laos, Thailand and Vietnam.

Ecohealth is an approach that recognizes there are links between humans and their biophysical, social and economic environments that are reflected in an individual's health. Ecohealth brings together physicians, veterinarians, ecologists, economists, social scientists, planners and others to understand how ecosystem changes are negatively impacting human health and to provide practical solutions to reduce the negative health impacts of ecosystem change.

1. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases, Division of High-Consequence Pathogens and Pathology, 2013. About One Health. Available at <http://www.cdc.gov/onehealth/about.html>

Direct consequences of low awareness

The project highlighted five direct consequences of low awareness of zoonotic diseases.

1. Disease impacts are not assessed

If a disease is not widely known or of less dramatic immediate impact, then it is unlikely that resources will be devoted to investigating its prevalence and impacts. Zoonoses don't just have impacts on human health; they also cause economic losses to the livestock sector and can threaten wildlife. Many of the diseases in the projects were not considered diseases of high importance in terms of government priorities. These attitudes were not necessarily based on evidence, as in most cases, recent animal and human health data on these diseases did not exist at the national or district level. As a result, decision-makers at various levels tended to prioritize attention to other health issues that may have appeared to be a larger threat. For example, leptospirosis (see definitions) is one of the most common zoonotic diseases globally and more than half a million severe cases are diagnosed in humans each year. Even so, the team in southern **Vietnam** could find very little recent prevalence data on the disease in humans and pigs.

How can leptospirosis be prevented?

Pigs, cattle and rodents are important reservoirs for *Leptospira* and shed these bacteria in their urine. There are some simple things that can reduce people's risk of exposure to leptospirosis. People working with animals should carefully follow personal hygiene measures and use disinfectant. Wearing protective clothing like gloves or boots when cleaning animals and their pens will reduce the chance of bacteria entering the body through cuts or scratches on the skin. The risk of leptospirosis spreading among animals can be reduced if they are separated by pens into smaller groups rather than kept in large groups.

2. Economic costs go unrecognized

Low awareness among health care workers means that it is less likely that a disease will be diagnosed in animals and humans. Poor detection leads to increased economic costs for individual households and society as a whole. For example, people affected by the disease will suffer economic losses due to decreased productivity or missed work and costs associated with seeking medical treatment. In the case of leptospirosis, individual pig owners and the pork industry suffer economic losses due to abortions or stunted growth in piglets.

Research on leptospirosis in southern **Vietnam** found a relatively high incidence of the disease among pigs and humans in the two districts surveyed, which belies the dominant belief that leptospirosis is not an important infectious disease.

3. Basic prevention can be neglected by health workers

With limited knowledge about their responsibilities in the prevention and control of zoonotic disease, animal and human health care workers are not equipped to advise the public on appropriate prevention and control strategies. Some of this lack of knowledge can be explained by structural or institution-

al weaknesses that may disable health workers from learning about zoonotic diseases. There is a well-established set of best practices for animal and human health workers to follow to reduce risk of zoonoses. Ensuring workers consistently follow these practices can be challenging, regardless of the context. The research team in **China** found veterinarians in Yunnan Province had limited knowledge on brucellosis (see definitions) and therefore were unable to effectively communicate the risks to their communities.

Quick facts on brucellosis

Brucellosis is a bacterial zoonotic disease with highest importance in cattle, sheep, goats and pigs. People are most likely to get infected through consuming unpasteurized dairy products, handling infected animals or when butchering infected livestock. The symptoms of brucellosis in humans are similar to those of other diseases like malaria – intermittent or irregular fever, headache, weakness, or generalized aching – which means that it is often misdiagnosed, causing delayed or unnecessary medical treatment and costs. Untreated brucellosis can result in debilitating long-term issues, such as arthritis, sterility, and depression.

4. Lack of awareness leads to risky practices

Low awareness about how zoonoses are transmitted by eating habits or animal management practices makes communities vulnerable to disease. The team in Cambodia used a household survey and participatory rural appraisal among rural communities in two provinces to investigate the causes of acute diarrhoea. More than one-third of households from areas classified as high-incidence for acute diarrhoea reported eating sick animals, most commonly chicken. In **China**, the team used focus group discussions to explore knowledge, attitudes and practices towards brucellosis. They learned that some people preferred to drink raw milk and some believed that health risks from eating raw meat could be reduced if alcohol was consumed beforehand. None of the participants appeared to be aware that these behaviours increased their risk of obtaining brucellosis or other zoonoses.

In southern **Vietnam**, the team used a participatory rural appraisal to assess how the community understands leptospirosis, which complemented the household surveys used to understand risk factors that might be linked to humans and pigs. None of the people who were interviewed knew what leptospirosis was, how it could be harmful to their farms or ways that it could be prevented. In **Indonesia**, the team's research improved understanding of Balinese attitudes towards dogs and dog ownership. Although the communities had a fair understanding of rabies, the research identified gaps in understanding prevention, specifically the importance of vaccinating puppies.

5. Awareness is not always enough

The study in **Cambodia** found that even though many farmers associated eating sick and dead animals with illness, it did not stop them from eating them. Likewise, most health workers had received training on good hygienic practices, but ensuring workers consistently follow these practices can be challenging. The research team in **China**

observed that some village veterinarians did not apply consequent biosecurity measures (e.g. use of disinfectant or gloves) when handling sick animals, which can pose a great threat to their own health or transmit brucellosis among other cows in the herd.

Our solutions

1. Use health education materials creatively

Using the synergy of partnerships, the teams used a variety of methods to raise awareness among different groups. In **China**, the team developed health education materials for farmers and workers in commercial farms. To raise awareness among health workers, the team actively posted publications and brief reports on their brucellosis findings on the websites of the departments of agriculture and public health. Towards the end of the project, the team reported that the provincial-level Centers for Disease Control was conducting more targeted training on zoonoses and Ecohealth approaches for village doctors, veterinarians and farmers.

Recognizing the power of youth to affect the behaviour of their parents, the team in **Indonesia** developed a rabies awareness curriculum and trained teachers to deliver it in elementary school classrooms in Bali. Using culturally-appropriate materials like brochures, posters, a film and songs, the teachers were able to present the messages in ways that were memorable and easily transferrable to other communities in Bali. In **Cambodia**, during feedback meetings with village health volunteers and farmers, the team discussed possible measures to control diarrhoea using the existing remedies in the villages. This kind of interactive discussion between researchers and community members became a useful tool for building community awareness about health risks and disease prevention.

2. Empower paraprofessional groups

The team in **Indonesia** built upon the existing village cadres system to establish Village Rabies Working Groups (VRWG), which supported the rabies control efforts of the Livestock Service Office. The VRWG (see definitions) was a paraprofessional group equipped to raise awareness about rabies in schools, village meetings and small groups in their own homes and serve as first responders to dog bite cases. General information on rabies and what it means to be a responsible dog owner encouraged communities to register and vaccinate their dogs, two evidence-based ways to control rabies. The model was recognized by provincial-level leaders as a promising community intervention. As a result, a legal decree was made to adopt the village rabies cadre system by officially appointing two persons to serve in this capacity in each of the 723 villages in Bali. In addition, the EcoZD team partnered with the provincial-level leaders to provide technical training for the rollout of VRWGs in 30 rabies hotspot villages.

Community empowerment to address rabies

The team in Indonesia promoted a model in Bali they called the Village Rabies Working Group (VRWG). The VRWG is a cadre of 3-5 representatives from each banjar, or village. The cadre are all local volunteers, selected based on their willingness to protect their own village from rabies with no consideration of gender, age, educational background or occupational status. The VRWG becomes an official structure of the village legalised by a decree of the head of the village and supported by an official letter from livestock services. The VRWG requires some technical support and mentoring from both livestock and health services to ensure that it provides appropriate support to current government rabies initiatives. Funding for the VRWG activities came from a variety of sources, including a microcredit scheme, a local poster competition, local government and external donors. Some of the benefits of the VRWG the team documented include more accurate village-level estimates of the local dog population, increased capacity to provide rapid response to dog bite cases and improved community awareness of what it means to be a responsible dog owner.

3. Host policy workshops

We understood that engagement of decision-makers would be critical to sharing meaningful results that could lead to changed behaviours. The teams conducted policy workshops at the end of their projects to share research results combined with relevant policy and practice recommendations. In southern **Vietnam**, policymakers, development practitioners and the research community gathered to discuss the research results and their implications for bringing attention to leptospirosis as a potentially serious public health issue and livestock industry concern. One key message that emerged was that in order to improve surveillance of the disease, a joint surveillance mechanism would need to be in place to link and coordinate disease reporting systems between animal and human health. Enhanced laboratory facilities and trained staff were also identified as an immediate need to allow effective identification and differentiation of different types of *Leptospira* affecting animals and humans.

4. Identify incentives for changing behaviour

Increasing awareness is important, but sometimes incentives are also needed to encourage behaviour change. Incentives can be economic or social. One powerful incentive is promoting behaviour as socially desirable. In **Bali**, school children and dog owners were encouraged to see responsible dog ownership as socially desirable behaviour, especially the importance of dog registration and rabies vaccination. The team in southern **Vietnam** recommended that officials enhance the public awareness of local authorities and local socio-political organizations, like unions, about the risk of leptospirosis in rural areas. These bodies are well-positioned to identify the appropriate, context-specific incentives that will accelerate changed behaviours that can reduce the risk of leptospirosis.

Policy recommendations

Policy makers at all levels of government can increase awareness of zoonotic diseases by:

1. Encouraging the development and use of health education materials tailored towards health workers and rural communities.
2. Empowering paraprofessional groups to support existing publicly-funded zoonoses control efforts.
3. Engaging regularly with other stakeholders involved in zoonotic disease management.
4. Identifying appropriate incentives that can be used to encourage changed behaviours that reduce zoonotic disease risks.

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