



Forum

Ten Years On: Generating Innovative Responses to Avian Influenza

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ABSTRACT

Since 2006, the number of recorded H5N1 avian influenza outbreaks has declined globally, but at mid-2012 the disease was enzootic in six countries in Asia and Africa, and sporadic outbreaks continue over a wide area. It is now accepted that it will take decades to eliminate the H5N1 virus in poultry and 'unconventional' response approaches have been called for. Drawing on increased understandings of the epizootic over the last 10 years, this paper investigates what conditions are required if such innovative approaches are to be generated. It argues that addressing the spread and persistence of avian influenza is primarily a political matter, and if approaches appropriate for enzooticity are to be devised, the social, political, and economic dynamics of the disease and responses to it need to be identified and prioritised. A dominant response strategy focused on outbreak events, containment and eradication has obscured these important dynamics. If innovative 'unconventional' responses are to be generated, a wider range of perspectives and expertise needs to be engaged. This will result in political processes of negotiation, which the technically led, development-orientated institutions directing and funding the global response are ill-equipped to facilitate.

Keywords: avian influenza, enzootic, politics, negotiations, science, uncertainty

INTRODUCTION

Since 2006, the number of recorded H5N1 avian influenza outbreaks has declined globally, but at mid-2012 the disease was entrenched in north Africa, China, the Indo-Gangetic Plain, the Indonesian archipelago (which reports the world's highest proportion of outbreaks) and the Mekong River basin (Food and Agriculture Organization [FAO] 2011). Over the last 10 years there have been a large number of outbreaks, many unreported, and hundreds of millions of poultry birds have died of the disease or through culling to prevent its spread (Alexander 2007; Alexander and Brown 2009; Kawaoka 2012). In 2012, human H5N1 cases continue to be reported from Bangladesh, Cambodia, China, Egypt, Indonesia and Vietnam, countries which are either enzootically infected, or have land borders with one (WHO 2012). Sporadic and more persistent spread extends from these areas to Japan and the Koreas eastwards, and to Europe and the Mediterranean westwards (Dubey et al. 2012; Marinova-Petkova et al. 2012; Sakoda et al. 2012). A deadly human influenza pandemic

involving H5N1 therefore remains possible, although international concern and funding is falling.

As of mid-2012, wealthier countries have experienced very few human infections and have contained and eliminated animal outbreaks by rapid disease detection, culling infected flocks, movement restrictions, cleaning and disinfection, and vaccination (Pittman and Laddomada 2008). Membership of the Organisation for Economic Co-operation and Development (OECD) and avian influenza control are correlated (Pavade et al. 2011). These conventional disease control methods, designed by and for economically developed countries, are encapsulated in the World Organisation for Animal Health's (OIE) codes, standards, decisions and guidelines (cf. OIE 2012). Underlying them is a set of medicalised 'outbreak' narratives focused on contamination, containment, and eradication (Rosenberg 1992; Scoones and Forster 2008; Wald 2008), a framing which has resonated with national health security concerns and media interests in the developed world. From 2003,

when the virus reappeared in southeast Asia, to around 2008, the response to avian influenza was consequently cast as a global emergency, and in the wake of a deadly outbreak of severe acute respiratory syndrome (SARS) emanating from Hong Kong in 2002–2003, manifested in significant international efforts focused on affected geographical areas, which have cost around US\$1 billion annually (UNSC/World Bank 2010). This response has reflected high income country approaches, emphasising disease surveillance, wide area and local culling, vaccination, biosecurity on farms and in supply chains, and behaviour change communications.

As enzooticity in six countries demonstrates, this approach has had limited success and ‘unconventional’ approaches to designing and implementing responses have been called for (Food and Agriculture Organization [FAO] 2011, xi). This paper draws on improved understandings of the epizootic over the last 10 years to investigate how such innovative approaches might be generated. Accepting that approaches developed in economically advanced countries have proved difficult to replicate with any sustained success in poorer regions, the paper argues that social, economic, and political factors have been primary in disease persistence, and many aspects of its spread, and that these dynamics have been occluded by technically orientated, emergency responses which have focused on disease outbreaks rather than their underlying causes. In order to respond more effectively to avian influenza, it is necessary not only to examine and take into account the dynamic biology of the virus, and the wider ecological systems in which it is in action, but also the social, economic and political environments in which the pathogen and responses to it land.

Doubtlessly a reframing is required in order to provide more holistic understandings and increased space for interdisciplinary approaches, but I argue that in embracing the commonalities of human and animal health, ‘One health’ concepts that consider health as an outcome of social–ecological systems, and related concerns regarding animal husbandry economics, cultural practices, and the environment (Wilkinson et al. 2011; Zinsstag et al. 2011; Sims and Peiris 2012; Zinsstag et al. 2012), political dynamics, and in particular the negotiations intrinsic to the uncertainty inherent in the virus, the disease, and responses to them, need to be recognised and

prioritised. Similarly, if more networked, locally embedded arrangements are to be developed, which will necessarily involve wider expertise (Scoones 2010a), diverse forms knowledge will need to engage (Parkes 2011), and political negotiations to find balances between differing goals and interests will be inevitable.

The paper first illustrates the prevalence of politics in the international reporting of avian influenza, and then outlines some ways that political dynamics have affected conventional control responses, particularly efforts focused on surveillance, the foundation of any disease understanding. Here potent national level political factors include the livelihoods of poor people, commercial agribusiness concerns, and the state of relations between people and their governments. Internationally, the health security and economic concerns of wealthy nations are also relevant, as are current shifts in global economic power and related conceptions of development. The paper next considers the current configuration of institutions and expertise arranged in response to avian influenza, and finds it ill-equipped to address or engage with the negotiations that are inherent in processes associated with formulating any ‘unconventional’ responses. In conclusion the paper suggests that it is only by adopting more open and participatory approaches, which encourage rather than suppress negotiation and debate, that any innovative responses will be generated, and that such plural, negotiated approaches offer further benefits related to equity, sustainability, democratic accountability, and managing uncertainty.

POLITICS AND PATHOGENS

From the earliest days of the avian influenza epizootic, political dynamics involving national pride, diplomatic agendas, and commercial agribusiness concerns have clouded understandings of the event. Every Asian country that has suffered major animal outbreaks, for example, initially concealed them. China, which also suppressed information on SARS in 2002, first detected H5N1 in mid- 1996, yet made no official announcements until early 2004 (OIE 2013). In Vietnam in 2003, official announcements were delayed so as to not disrupt the imminent Southeast Asian Games (Greenfield 2004), and in Thailand, which was then exporting chicken meat worth US\$1.3 billion

annually, a diplomatic row erupted in early 2004 when H5N1 infection was officially declared just days after a senior European Union official had been assured that there was no infection in the country (Safman 2009). In Indonesia, H5N1 avian influenza was laboratory-confirmed in October 2003, but the government made no announcement until forced to by neighbouring countries' trade bans and media pressure in January 2004 (Setiogi 2004).

Political and economic dynamics have also confounded conventional control responses. Evidence on vaccination, for example, has been drawn upon differently both to support and oppose a vaccination policy, as determined by business and donor interests (Pongcharoensuk et al. 2012). In 2004, Thailand rejected poultry vaccination as it would have prevented trade and had a major impact on the economy, a move many saw as a concession to well-connected business interests.

As was subsequently seen, suspicion resulting from Thailand's lack of transparency affected trade more detrimentally than vaccination. In contrast, neighbouring Vietnam, which had no export-orientated lobby to consider, enthusiastically adopted vaccination, as advocated and funded by foreign donors, a policy that eventually saw half of the vaccine provided in the country wasted (Vu 2009). Similarly in Cambodia, the response was dominated by external donors, and became more driven by creating opportunities for patronage and rent seeking than identifying and implementing effective disease control policies, and poor rural poultry farmers suffered the brunt of an ineffective response through major culling campaigns (Ear 2009). Less sinister political dynamics, such as processes of rapid democratisation and political decentralisation, have also been identified as frustrating control efforts in Indonesia (Forster 2009).

Surveillance—collecting, analysing, and disseminating data on the incidence of a pathogen in space and time—is fundamental to understanding and responding to any disease. In the case of influenza, continuing detailed monitoring for changes in viral genetics is also vital. Yet in the field, and at national and international levels, surveillance efforts have been persistently frustrated by political dynamics. In the field, concerns regarding stigma, neighbourly relations, and commerce echo those

related to international trade mentioned above, and surveillance is most challenged by the reluctance of many farmers to report unless timely compensation for any subsequent culling is assured, a process which creates manifold complexities associated with disbursement, reimbursement, and moral hazard. Further along commercial supply chains, through traders and marketeers, and even to financial stock markets, news of outbreaks is also suppressed in order to prevent adverse consumer reactions and reduced consumption (Charnoz and Forster 2011).

These denials and other contentions arise easily and are amplified due to the difficulties of definitively diagnosing avian influenza. Infected poultry do not always display symptoms, disease can be masked by vaccination, and other poultry diseases can confuse diagnosis (Cardona et al. 2010; Hinrichs and Otte 2012). Any diagnosis of H5N1 infection therefore requires confirmation by a validated test to detect the virus or its genome which can slow detection and subsequent response actions. With any effective culling or movement controls dependent on early detection, and vaccination campaigns requiring continuing detailed viral surveillance (Domenech et al. 2009; Swayne et al. 2011), the political and economic dynamics suppressing reporting in the field have adversely affected all three major technical elements of a conventional response.

NATIONAL AND INTERNATIONAL DYNAMICS

At the national level, the dynamic and often charged processes of relations between people and their governments have also adversely affected response efforts. In some cases, governments have little authority to set or implement credible policy. In Indonesia, for example, small poultry farmers have experience of a catalogue of misguided government interventions dating back over 40 years (Rusastra et al. 1988; Yusdja 1996; Yusdja et al. 2004), and particularly in the context of rising democracy, unpopular centrally determined interventions have been regularly challenged or ignored. In Thailand, as discussed above, policy was unduly influenced by business interests. In other cases, governments can ignore popular opinion and enforce ineffective policies. Few Vietnamese farmers, for example, have been consulted on any policies or plans, and have been coerced into compliance with inappropriate vaccination and culling programmes (Vu 2009). More prosaically,

low commitment from some governments is understandable. Many lower income countries face more immediate and dangerous health threats than avian influenza, and building the veterinary, animal production, and laboratory infrastructures required for any effective surveillance and response systems are long-term, politically unrewarding processes.

At the international level, political dynamics are also influential. These are particularly potent in the case of avian influenza as a result of the mingling of national security concerns and more normative, development-orientated, global public health agendas. Given the human pandemic potential of the virus, and the potential economic effects of such an event, avian influenza surveillance and response efforts are easily perceived as designed primarily to benefit wealthy nations (Calain 2007a, b). Indonesia's withholding of human H5N1 virus samples between 2007 and 2009, claiming that they would be used to make vaccines unaffordable to Indonesia, made plain the nature, scale, and importance of possible contestations (Fidler 2007, 2008, 2010; Sedyaningsih et al. 2008; Elbe 2010). As global economic orders reconfigure, novel conceptions of international relations and development are emerging, remote from existing centre-periphery models (Appadurai 1996; Sivaramakrishnan and Agrawal 2003; Sassen 2007), and beyond responding to avian influenza, global authority is increasingly fragile, and increasingly subject to negotiation, even given widespread implementation of the 2005 International Health Regulations.

From the imperatives of smallholder farming, then, to the provision of global pharmaceuticals, political, economic, and social dynamics can be seen to complicate and often confound conventional disease control methods. Acknowledging these dynamics is vital, and engagement with them is essential, if avian influenza is to be more effectively controlled. Yet, as discussed below, the current configuration of institutions and expertise, internationally and nationally, is poorly equipped to do this. With rapidly expanding, lightly regulated, poultry production sectors now linked with avian influenza incidence and persistence (Gilbert et al. 2008; Hogerwerf et al. 2010), and mixes of different farming systems with inconsistent biosecurity standards in close proximity implicated in inhibiting disease control (Food and

Agriculture Organization [FAO] 2011), which organisations, for example, nationally or internationally, have the authority, credibility or inclination to negotiate with, or even to broker negotiations among, a food and farming industry that ranges from billion dollar turnover transnational corporations to subsistence level smallholders?

Similarly complex and intensely local negotiations around responsibilities and rewards are required if the interests and concerns of those people involved in the complex supply chains between farms and large, poorly managed live bird markets, which also have been linked with disease spread and persistence, are to be addressed; and the same holds true if more networked, locally embedded arrangements are to be developed, which engage and involve wider expertise, with the intention of encouraging more systemic styles of surveillance, and more responsive control systems better linked to local needs and concerns (Scoones 2010b). Likewise, if public and private actors are to be better coordinated, and if any long-term demand for disease control is to be encouraged among poultry producers, traders, governments and, perhaps most importantly, consumers, the competing goals, interests and concerns of different groups need to be recognised, along with the inevitability and importance of wide-ranging, transparent, and equitable negotiations among and between them.

THE CAPACITY OF SCIENCE

None of these matters sit easily with the capacities, expertise, and mandates of the technical organisations that are currently directing, funding, and implementing the global response. At the most practical level, few of the veterinarians, virologists, and medical doctors involved at international or national levels are equipped, or inclined, to engage in political negotiations associated with poor peoples' livelihoods, corporate commercial interests, or the tectonics of geopolitical realignments, for example. More conceptually, the determinedly apolitical stance of the science that underpins the directions and capacities of the current response, which sets knowledge and power (i.e., science and politics) into separate and irreconcilable zones (Latour 1993, 2004), inhibits such considerations. Time and again, across a range of domains highly relevant to the avian influenza

response—international relations, science and technology, and international development—misguided policies have been generated, and programmes have failed, as a result of expert technical organisations defining problems in the supposedly neutral language of science, and consequently prioritising technical solutions that exclude political, social, and economic factors (Ferguson 1990; Li 2007).

A technical, science-based configuration is, however, not only challenged in accepting that political dynamics are pertinent, but is also badly positioned to act as a broker in facilitating any negotiations associated with them. Groups with both recognised domain expertise and authoritative claims to policy-relevant knowledge, can collude, even unwittingly, to promote solutions that support a technical, scientific viewpoint, and exclude others (Haas 1989, 1992); and governments, more often than not, are keen to privilege them, especially when faced with open-ended political problems such as those associated with animal and zoonotic diseases (Hinchliffe 2001; Campbell and Lee 2003; Van Zwanenberg and Millstone 2005). With deliberation framed by scientific interests and technical possibilities, and policy objectives determined by politically unaccountable representatives, transparent democratic negotiations toward publicly-orientated objectives can be inhibited, if not precluded (Jasanoff 1990; Wynne 1992, 1999; Jasanoff and Wynne 1998; Jasanoff 2004).

In the case of avian influenza, these political complexities are exacerbated by the uncertainty that is inherent in the unpredictable genetic dynamics of the virus. This uncertainty is compounded by the variable manifestations of the disease in humans and animals, and embedded and propagated in response efforts (Fish et al. 2011). In these circumstances, the current science-based configuration of the response, which is based on rationalist, reductive-aggregate approaches to risk management, is insufficient (Stirling and Scoones 2009). A risk management-based approach to surveillance, response planning, and disease control that depends on expert authorities assessing hazards, devising rational management strategies, and communicating with lay publics, fails in the face of the uncertainties that the virus and the disease present, and the ignorance that persists regarding aspects of both. Treating

ignorance and uncertainty as risk, however, is not just an inadequate response to incomplete knowledge. Such processes also narrow response and policy options, limit the possibility of democratic engagement, and make scientific advice vulnerable to unacknowledged political dynamics (Stirling 2010). Professionally, institutionally, and culturally, then, the current configuration of the response is not just ill-equipped to foster or broker innovative, unconventional approaches, but actually inhibits their development.

CONCLUSION

Now with ten years experience of responding to the uncertainties surrounding H5N1 avian influenza, I suggest that there are three things we know for sure. First, it is evident that if increasingly prosperous and urbanised populations are to consume increasing amounts of poultry, highly pathogenic avian influenza viruses such as H5N1 will present us not just with a long-term problem, but a permanent one. Low pathogenicity avian viruses circulate widely in aquatic wild birds and poultry, and some H5 and H7 low pathogenicity viruses have the potential to mutate to highly pathogenic ones. Furthermore, as the 2009–2010 H1N1 pandemic demonstrated, avian viruses and swine viruses, which are subject to the same drivers of increased meat consumption and mixed farming systems, have a lively affinity. The influenza virus—in birds, pigs and humans—is therefore unlikely ever to be eradicated. No ‘control at source’ is possible. The best we can do is to learn to co-exist.

Second, it is now clear that a universalistic, rules-based, global approach is unlikely to generate any globally effective solutions. A science-based, technically driven response doubtlessly is effective in some places—the wealthier, more industrialised nations where it was devised—but the sheer variety of its consequences and effects in different social, economic, and political terrains, along with its variegated and in some cases misappropriated manifestations, suggest that a ‘one-size-fits-all’ approach is insufficient, and that enforcing such an approach is unlikely to be effective, and may even be counter-productive.

Third, I suggest that it is now certain that more open and participatory approaches involving a wider range of perspectives are

required, and that the inevitability of the negotiations that accompany such approaches needs to be accepted. It is only by encouraging debate that any 'unconventional' responses will be generated. The benefits of allowing plural, self-determined responses go beyond fostering innovation and the sustainability that accompanies democratic engagement. Accepting, or at least considering, a wider range of viewpoints reduces uncertainty. Surprises are still possible, but if as many options as possible have been considered, surprises are less likely, and in the wake of wide-ranging and open consultations, unpleasant surprises are less politically catastrophic. A more open, participatory stance also increases accountability and makes more explicit the social dynamics and political pressures acting on, and among, scientific policy advice. Opening up rather than closing down negotiations around alternative and complementary responses also brings into focus the distributive effects of any interventions. By considering who gains and who loses as a result of any interventions, or the lack of them, more equitable, and therefore more sustainable, responses can be devised.

Accepting more plural approaches will involve science surrendering some of its purity, superiority and supposedly apolitical authority, but this is an essential step toward enabling more flexible responses that accept a multiplicity of perspectives and concerns, and acknowledge the mutable and contested nature of the H5N1 virus and its effects. If it is not recognised that science presents just one of many perspectives, a dangerous rigidity ensues: alternative ways of understanding are ignored, suppressed or obscured, and iterative processes of deliberation and learning, which are essential for coping with such uncertain and dynamic circumstances as those involving an influenza virus, are precluded.

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