



Animal Health in the 21st Century: Challenges and Opportunities

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Summary

- Rapid multivariable changes are increasing the magnitude, severity, dimension and frequencies of classical and novel animal diseases, some of which have human health implications, around the globe.
- Shifting institutional animal health 'landscapes' encompass significant redefinition of roles and responsibilities, which result in a dynamic reconfiguration of actors and networks.
- On-going adjustments in the institutional animal health 'landscape' the open up opportunities for synergistic alliances and partnerships, as well as exposing challenges such as antagonistic competitions and rivalries.

1. Introduction

Over the past decades the expansion of agricultural frontiers, changes in land use, dramatic growth of livestock populations, climatic changes, and trade liberalization, among other factors¹, have contributed to an increase in the (re-)emergence of 'old' and novel animal diseases, some of them of zoonotic nature, as well as growing geographic expansion of infections in livestock populations around the globe (Wilson, 1995; Woolhouse and Gowtage-Sequeira, 2005; Barclay, 2008; Jones *et al.*, 2008).

National and international animal health agencies are strongly influenced by internal and external factors, such as the relevance of livestock sector development in national agendas and its

¹ These include economic, social, cultural, environmental, evolutionary, and demographic factors.

respective budgetary allocations, the demand for animals and animal products in national and international markets, commercial and financial interdependency, zoosanitary regulations, and the national and regional risk and security frameworks (and their associated preconceptions), which in turn affect and modulate disease prioritization, programme planning and funding redistributions (for related statements, see: Umali *et al.*, 1994).

Given the growing awareness about animal disease risks and their economic ramifications, the national and international contexts in which animal health systems function are changing rapidly and it is imperative to examine if and how the institutions and organizations assigned with the responsibility of preventing and controlling animal disease threats, and mitigating their impacts, are adapting.

2. The Global Landscape of Animal Health: Roles and Actors

The current global landscape of animal health actors consists of national institutions and international organizations, as well as private sector actors, some of which operate transnationally. The main categories of roles and their most relevant actors are:

Delivery of animal health programmes and services – First and foremost, delivery of animal health programmes and services falls into the remit of national public and private animal health systems (NAHS). Second, service delivery by NAHS can be supported by international (global or regional) organizations such as the Food and Agriculture Organization (FAO), the African Union-Interafrican Bureau for Animal Resources (AU-IBAR), the Regional International Organization for Plant Protection and Animal Health (OIRSA), the Inter-American Institute for Cooperation on Agriculture (IICA), Animal Health Networks (AHN)², Civil Society Organizations (CSO)³, and Multinational Livestock Producers (MLP). It is important to mention that in contrast to the animal health programmes and services rendered by NAHS, MLP activities do not fall into the realm of ‘global public goods’ as their intrinsic mandates seek shareholder profit maximization rather than addressing, without gainful motives, animal and human health.

Disease intelligence, early warning and foresight – The occurrence of selected infectious animal diseases is routinely monitored and tracked by the World Organisation for Animal Health (OIE), the Food and Agriculture Organization (FAO), the World Health Organization (WHO) [when bundled these organizations are also known as International Technical Agencies (ITA)], and Centers for Disease Control and Prevention (CDC), located in the United States of America (USCDC) and in Europe (ECDC). Many of these actors supplement their information systems by

² These comprise OFFLU, EuroFlu, EISN and GOARN.

³ These comprise social and civic action groups, non-government entities and non-profit organizations.

taking advantage of the products and services delivered by smaller disease tracking initiatives, such as ProMED, Emerging Health Threats Forum (EHTF), Global Infectious Disease and Epidemiology Network (GIDEON), Animal Health and Emerging Animal Diseases (AHEAD), the Food Safety Network (FSnet), and the Agriculture Network (AGnet), among others. Although the foreknowledge of animal health events has been identified –and for many years heralded– as an urgent need to better address animal diseases, little practical progress has taken place in this area.

Research and development of animal health related technologies – Pertinent actors are involved in one, some, or all of the steps regarding research and development (R&D) of animal health related technologies, and include pharmaceutical and biotechnology companies (PBC), universities, and research institutes (RI), such as the International Livestock Research Institute (ILRI) or the French Agricultural Research Centre for International Development (CIRAD), among others. From a wider perspective, R&D as an institutional or corporate activity encompasses animal health products, diagnostic kits, laboratory equipment, risk analysis software, cutting-edge epidemiology tools, and more.

Standard setting – Under the World Trade Organization (WTO) agreement on the application of Sanitary and Phytosanitary (SPS) measures⁴ signed in Marrakech on 15 April 1994, the World Organisation for Animal Health (OIE) and the FAO/WHO Codex Alimentarius Commission (CAC) have been assigned the authority of setting international standards dealing with animal and plant health and food safety, driven predominantly by increasing regulatory requirements in response to scientific developments regarding the risks associated with food, and consumer concerns, mainly in developed countries, about food quality and safety (Henson and Reardon, 2005). Because international standards are too broad to account for country and production system differences and neglect private company liabilities, large multinationals and food corporations set their own private standards beyond those established by international bodies.

Financing –The bulk of NAHS activities are funded by budget allocations of national governments (NG). However, core and peripheral funding of international and regional organizations comes from annual contributions of Member Countries; as well as from specific project funding by specialized financing agencies [the World Bank (WB), the Asian Development Bank (ADB), the African Development Bank (AfDB), the Inter-American Development Bank (IDB)], multilateral [the European Commission (EC)] and bilateral agencies for international

⁴ Sanitary and phytosanitary (SPS) measures were one of the areas addressed by the Uruguay Round of trade negotiations, which resulted in the creation of the WTO in 1995.

development (AID)⁵ of developed nations, and increasingly by philanthropic foundations (Winrock, Rockefeller, Ford, Kellogg, Bill and Melinda Gates).

3. Dynamics of Animal Health Actors

A brief description of the dynamic interplay between actors can help in understanding the relationships that take place among them. For example, animal health products manufacturing (i.e. vaccines, antibiotics, medications) remains almost exclusively under control of PBC with intermittent information and regulatory inputs from RI, OiE, AHN and NAHS. In fact, in the last two decades, PBC have successfully lobbied for increased interventionist measures in veterinary medicine and veterinary public health (i.e. more vaccine and medication usage). Globally, the elaboration of food safety principles, animal health and welfare guidelines, and standard-setting exercises fall under the responsibility of CAC and OiE, with inputs from renowned experts and reviewing committees. Much of the disease monitoring and tracking, early insights into disease dynamics, trend spotting, foresight, and disease intelligence are carried out to varying degrees by CDC, RI, universities and ITA.

The implementation of international projects in the area of animal health programmes and services falls under the overall remit of FAO, AU-IBAR, OIRSA, IICA and AID; however, the gaps left by international bodies are covered through localized actions by AHN, CSO, and NAHS. All these entities engage to one degree or another in strengthening of animal health infrastructure, capacity-building, training, awareness-raising campaigns, vaccination, disease tracking and monitoring, biosecurity promotion, disease prevention, control and surveillance either through classical measures or innovative grassroots approaches. Additionally, in locations where institutional failures and weak governance are detected, projects in veterinary legislation, technology transfer, environmental stewardship and sustainable livestock development are implemented. Lastly, to directly or indirectly conduct national, regional and international animal health activities actors receive funds from NG, AID, ADB, AfDB, IDB, WB and EC in the form of loans, grants, aid, donations, budget allocations or cash transfers.

Ideally, actors should concentrate their actions on core competencies. However this is not always the case. The activities of some actors are relatively fixed, with very little room for redefinition, but for others, their roles are more flexible and increasingly novel owing to the nature of an ever challenging environment. For instance, the need to incorporate technological developments into

⁵ The Swedish International Development Cooperation Agency (SIDA), Japan International Cooperation Agency (JICA), French Development Agency (Agence Française de Développement–AFD), Australian Government Overseas Aid Program (AusAID), U.K. Department for International Development (DFID), Danish International Development Agency (DANIDA), German Technical Cooperation Agency (Gesellschaft für Technische Zusammenarbeit–GTZ) and the U.S. Agency for International Development (USAID).

epidemiological tools to generate disease intelligence has resulted in redefinition of roles and mandates in selected organizations. It appears as if actors are trying to find their right place within a shifting landscape, whilst realising that their roles, responsibilities and dynamics are evolving, which invariably leads to interactions that result in alliances and rivalries, while exhibiting synergies and antagonisms. In view of this, the most pressing questions are (1) do actors adjust their working frameworks in parallel to changes in their landscape? and (2) are actors overcoming challenges and embracing opportunities to better address 'old and new' animal health issues?

4. Alliances and Synergies

As a result of operational overlaps and perceived synergies a number of formal and informal alliances have emerged in recent years. One of the most salient inter-agency alliances is between FAO and OIE as a natural outgrowth of joint elaboration of a global framework for the control of transboundary animal diseases. This alliance has spilled-over into collaborative networks, such as the network of expertise on animal influenza (OFFLU) and the establishment of Regional Animal Health Centres (RAHC) around the world. It is argued that the creation of RAHCs will lead to improved animal disease prevention and control by leveraging the logistical and technical capacities of both agencies, yet the functionality of this merger remains to be seen. Additionally, FAO and OIE work jointly in the elaboration and promotion of animal health guidelines that encompass themes such as vaccination, biosecurity and animal welfare. Other strategic alliances have taken place between ITA, such as OIE with WHO, FAO with the United Nations Children's Fund (UNICEF) and WHO with the United Nations Development Programme (UNDP) to deliver specific components of projects related to food security and poverty alleviation in the context animal disease risk management which comprises awareness-raising, hygiene education campaigns, and capacity-building on risk communication and pandemic preparedness.

In similar fashion, national and international bodies have liaised with a diverse portfolio of CSOs⁶ in developing and transition countries. These logistical and operational relationships as well as cooperative engagements have flourished owing to the conceptual dichotomy between 'enabling' and 'doing', that is, the realization that nimble, dispersed, localized and small entities tend to be more effective in reaching target groups in distant rural locations than larger, international organizations which are more effective in influencing policy frameworks. On the other hand, in an effort to broaden links with scholarly thinking, ITA, CSO and donors alike are working closely with

⁶ These comprise civic and social organizations and institutions, such as Agronomes et Vétérinaires Sans Frontières, Médecins Sans Frontières, CARE, Red Cross, International Federation for Animal Health (IFAH), the Wildlife Conservation Society, the Wildlife Trust, Heifer International, and Save the Children.

universities⁷ and think-tanks.⁸ Another front of collaboration has been the joint organization of international meetings that serve the purpose of raising awareness about contemporary pressing issues, setting priorities for immediate action, gain financial commitments, and gathering stakeholders to foster exchange of ideas, networking, collaborations, and consensus-building.

5. Competitions and Antagonisms

The abovementioned alliances, strategic partnerships, and their accompanying synergies take place under a highly dynamic environment in which competition, rivalries and antagonisms also play a role in defining –and balancing– the intrinsic nature of these relationships. First, there are cases of competition between institutions with overlapping mandates for conceptual definition on the breadth and depth of their respective spheres of influence, as well as for recognition and acknowledgement in national and international arenas. This type of competition occurs domestically between CSO and NAHS, as well as internationally (for example, between FAO and OiE). In fact, independent third-party observers ascertain that FAO and OiE present a façade of strategic convergence and normative like-mindedness, arguing their alliance is one characterized by divided loyalties, conflicting agendas and competition for recognition (Scoones and Foster, 2008).

Second, there are vicious rivalries for financial resources, which, as expected, arise from the desire to capture a non-trivial portion of funds to develop programmes, implement projects, avoid strategic marginalization, and to establish disease intelligence units related to specific animal health problems. Economic competition in the form of fund grabbing is also seen within countries in which ministries fight over budgetary allocations from NG and grants from AID (Ear and Burgos Cáceres, 2009). Third, disagreements on disease focus (i.e. priority vs. non-priority) are also exhibited owing to territorial limitations, the economic importance of relevant diseases in specific locations, institutional biases, and mismatches on what nation-states need and what donors are willing to fund (i.e. long-term development ‘thinkers’ versus short-term emergency ‘activists’). Lastly, important progress in normative actions and operational frameworks are hampered as a direct result of professional and disciplinary divides within and between ITA (Scoones and Foster, 2008).

⁷ For example, the Royal Veterinary College (RVC) at the University of London, Imperial College London, the National Veterinary School in Lyon (ENVL), the Rural Development Research Consortium (RDRC) at the University of California–Berkeley (UCB), the Institute for Development Studies (IDS) at the University of Sussex, the University of Reading, and the United Nations University (UNU).

⁸ For example, the Organisation for Economic Cooperation and Development (OECD), the Royal Institute of International Affairs–Chatham House, and the Overseas Development Institute (ODI).

6. Donors and Funding

One of the least scrutinized but highly influential actors in the animal health landscape are donors and their respective AID. There are numerous anecdotal accounts of how donors are in the driving seat in setting-the-scene and establishing priorities regarding animal health issues of NAHS and international animal health systems, including the agendas of specialized organizations tasked to deal with technical issues. Much of this response comes as a consequence of their strong bargaining powers resulting from their substantial resource endowments. It has become evident that when pernicious zoonotic diseases loom as threats to national interest, reactive emergency actions take precedence over proactive strategic ones. This was clearly seen with severe acute respiratory syndrome (SARS) and highly pathogenic avian influenza (HPAI), diseases for which governments of industrialized countries were very clear and determined about their desires to control the disease at source. The threat of pathogens and/or diseases reaching their shores caused public outcry, thus prompting institutions and politicians to rapidly earmark [and in many cases redirect] public funds to finance all pertinent activities needed to mitigate pathogen-disease spread (Jonas, 2008).

Because donors are inherently endowed with the power to give and take substantial financial [and human] resources to ITA, they also acquire, by absolute disposition, the ability to set the affairs that benefit them the most and that contribute markedly to uphold their national security and public health agendas. To accommodate this situation, NAHS, AHN, CSO and ITA are prepared to selectively separate fundamental policy and conceptual stances from concrete and immediate interests, something donors manage to leverage to their advantage. As a consequence, ITA, CSO, AHN and NAHS pliantly accept resource allocations to address animal health issues on different scales and with mixed/different priorities. The problem however is that the party may all too soon come to an end: the unexpected, emergency-based influx of funds often ends very soon after the threat or perception of imminent threat subsides (seen with SARS and HPAI).⁹

More recently, post-allocation evaluations of projects funded by AID are a beneficial and advantageous result of accountability measures enforced by donors using benchmark-based impacts and cost-benefit analyses, especially during times of financial constraints. Against this background, institutional watchdogs, civic action groups, and leading think-tanks have taken the opportunity to bring to the attention of government officials a large array of long(er)-term sustainability issues pending over their aid and development initiatives, most of which are related to the inability of programmes and projects to continue to operate once financial support is

⁹ This windfall warning and its consequences were aired by a leading science journal in relation to the recently disbursed US\$10.4 billion that the U.S. congress awarded to the national institutes of health, for more information see: *Nature*, Vol. 261, Issue 7266, 15 October 2009, p. 847–848.

withdrawn. For the most part, financing actors seem impervious to criticism arguing that their financial support is contingent on economic performance, national strategic interests, fiscal stability, and subtle geopolitical considerations.

7. Final Thoughts

As a consequence of the complex architectural landscape of the global animal health system, the (re-)emergence of diseases, particularly those of zoonotic nature, and the strong influence of donors in decision-making processes of ITA and NG, many organizations and institutions have been forced to engage in erratically tackling diverse disease threats rather than in systematic disease risk management. There is fear that continued disorderly approaches to animal health management in the future, and exclusive emphasis on economically important diseases in the present, could result in increasing neglect of less prominent, opaque diseases that, albeit smaller, still have detrimental impacts on rural farming communities worldwide and may be a high local priority. Although it could be argued that there is nothing wrong with focusing on the control of economically important diseases, the more pertinent and relevant question to ask is: to whom a specific disease is of particular economic importance.

Most worryingly though is the transition from long(er)-term to short-term support for animal health interventions that inevitably limits the portfolio of activities to immediate, emergency control actions with little or no post-crisis assistance for affected communities. This long to short transition phenomenon must not go unaddressed as the impacts of current actions undertaken by donors, ITA, CSO and NAHS have significant spill-over effects into human health, future economic growth potentials, and livelihoods of those affected.

As noted, shifting animal health landscapes encompass significant redefinition of roles and responsibilities which result in a dynamic reconfiguration of actors and networks. To some extent this reconfiguration presents itself as multifaceted collaboration and cooperation taking place at a rapid pace in the last few years between international agencies, the private sectors, universities and research institutes, civil society organizations, and national animal health services. Yet these interactions continue to be dogged by contention, mistrust and competing priorities. It is now more than ever important to welcome progressive initiatives for work in common spheres of competency and expertise by collectively uplifting positive-sum junctures and by attempting to mitigate, if not eliminate, deleterious obstacles. This positive demeanour is all the more so critical in developing and transition countries where the need to establish solid, competent and sound institutions to carry out much of the animal health work independently is heralded a priority (UN General Assembly, 2009).

The continuous multidimensional adjustments taking place nationally, regionally and internationally open up opportunities for synergistic alliances and partnerships, as well as revealing challenges such as antagonistic competitions and rivalries. For example, the existence of rapid, mass-reaching information sharing and communication technologies (i.e. internet, video streaming) presents tremendous opportunities to all animal health stakeholders wishing to harness the multiple attributes of the worldwide web (i.e. reaching vast multicultural audiences inexpensively and fast), and to strategically engage with national, regional and international media outlets to better inform audiences and stakeholders about animal and human health issues, as well as to reduce or avoid incendiary narratives and alarmist rhetoric that could very well result in reduced fear, lower stress, paranoia abatement, and anxiety level decline (Cáceres and Otte, 2009).

Existing technologies such as e-mail, mobile phones, short messaging services (sms texts), product and shipping crate barcodes, livestock identification tags, and traceability hard and software can be leveraged to improve animal disease monitoring and tracking as well as tighter quality controls along the food value chain. Additionally, novel technological developments applied to epidemiological tools to improve disease intelligence must be harnessed and embraced in order to expand the portfolio of options to better manage animal diseases. Many institutions and organizations are working independently and isolated in designing novel epidemiological applications, hence aggregation of ideas and products under amiable cooperative agreements seems pivotal and warranted.

On the other hand, aside from the rise in emergence of novel animal diseases, the contemporary institutional challenges related to divisive discord, professional disagreements and contestations coupled with reduced financial support, strong donors influence and divergent funding timelines can be better addressed through a shared vision, strong leadership, concerted drafting of issues and options, collective ownership of goals, and shared understanding of the social, economic, political and cultural dimensions of animal health.

In conclusion, the advent and current progression of the 21st century must be accompanied by a renewed work attitude within the established animal health landscape. Similar indeed to the opportunistic and utilitarian engagements taking place at the international geopolitical arena, this new attitudinal configuration must be impinged by selective work proposals in areas of common interest, of shared expertise and of expected positive results. Surely, dispute and contention will arise just like it has happened in the past. What could now be different is a new *modus operandi* that is more local, specific, pragmatic and revisionist in contrast to the global, broad, occlusive and oftentimes confusing present arrangements. We can expect more collaboration between ITA and CSO, as well as between CDC and AHN, especially in human health. The best practices derived from these engagements and lessons learned (positive and negative) need to be

documented and shared with wider audiences to further detect the strengths, weaknesses, opportunities and threats that arise from these interactions. As for donors and financing, ITA could present a unified front in addressing some of the funding, timeline and prioritization issues, which could resonate much more powerfully among donors' decision making, especially since financial support to ITA, CSO and NAHS is seen and categorized wholly as overseas development assistance that could be strategically pitched as comprehensive and multidimensional approaches that support long-term goals and objectives. Lastly, engagements that seem to be working well now can be made to work even better.

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9. Disclaimer and Contacts

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