Lessons learnt from responding to risks and disasters: Highly Pathogenic Avian Influenza and Rift Valley Fever

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TRANSBOUNDARY ZOONOTIC DISEASES (TZD)

- Affect both Man and Animals
- Are a major cause of morbidity and mortality in both animals and humans
- Cause catastrophic losses in animal production and productivity
- Induce serious constraints to trade of animals and animal products
- TZD cause far-reaching socio-economic consequences in developing countries
- In Africa, they sometimes turn into true natural disasters, throwing into question the fragile economies and reversing development gains made over several decades

TZD (continued)

- Two new TZD recorded in Africa in 2006
- Highly Pathogenic Avian Influence (HPAI) caused by H5N1 influenza virus is an emerging transboundary zoonotic disease at the global level with disaster implications
- Rift Valley Fever is a re-emerging transboundary zoonotic disease in Eastern Africa

Impact of TZD on Productivity and Competitiveness

HPAI and RVF being important TZDs are major constraints to profitable livestock operations as a result of or because:

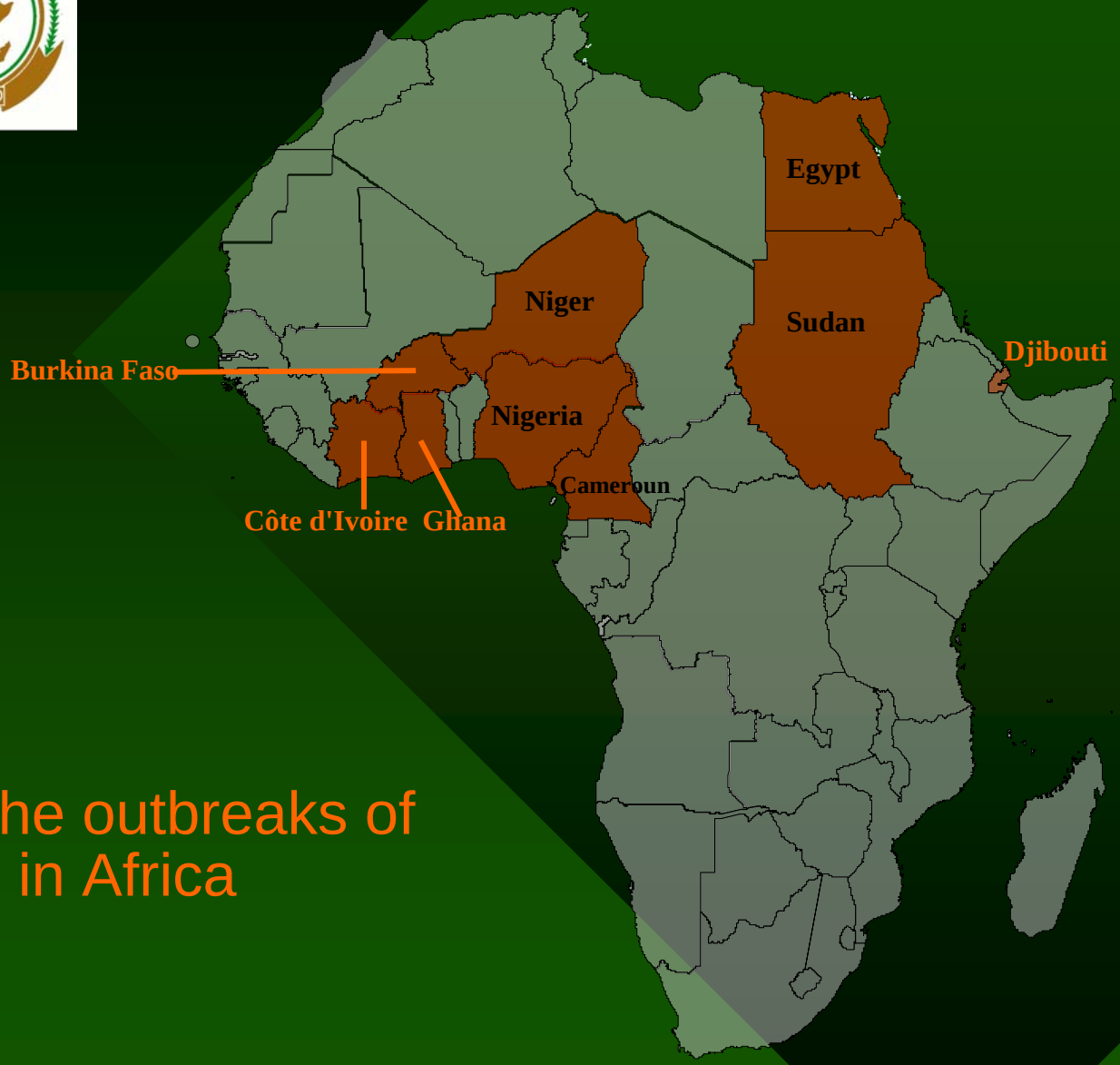
- Catastrophic production losses
- negative effect on food security
- Disruption of trade in animals and animal products in the increasingly globalizing world
  - The presence of TAD represents a major constraint in complying with SPS standards of the WTO which are implemented by the OIE.
  - Under the SPS Agreement, importing countries can employ sanitary measures to the extent necessary to protect human and animal life and health.
- Being zoonotic and with the potential for pandemic proportions (HPAI), further compounds the problem.

1. HPAI: Background

- Introduction of HPAI into uninfected areas and countries occurs through interaction of domestic poultry with migratory waterfowl, trade and movement of Humans, vehicles…
- Locally, the virus is primarily spread to other animals through direct contact with infected droplets.
- Transmission from animals to humans is mainly through frequent and intensive contact with respiratory secretions and the excreta of infected animals.
- No prediction yet as to when the virus might reach an adaptive level to allow for human-to-human transmission
- WHO estimates that should the pandemic occur, millions of people could die of the disease.

1.2. The HPAI situation in Africa

- HPAI was first confirmed in Africa in February 2006 in Nigeria and has since infected 8 more African Countries.
- At least 15 cases of human fatalities have been recorded on the continent out of 36 confirmed cases.
- The production systems, socio-cultural and trade practices on the continent have favoured endemicity (Nigeria & Egypt)
- The continent's vulnerability has had vast socio-economic consequences such as a decline in food security, income generation, employment and increased strain on rural livelihoods.
- There are no quantified estimates of the costs but the disease has caused severe direct and indirect losses: more than 32 millions poultry died or culled.



1.3 The outbreaks of HPAI in Africa

1.4 The risk of HPAI in Africa

- Under the current worldwide wave of outbreaks, the African continent is regarded as the weakest link in global prevention and control of the disease because of
  - the inherent weaknesses of the continent's epidemio-surveillance networks, diagnostic laboratory capability, and response capacities to face emergency situations;
  - Production systems, socio-cultural and trade practices that favour endemicity
  - little or no attention paid to the study of domestic-wild birds interface;
  - the insufficient information and general awareness.
- All these factors favour the creation of an endemic status, which would in effect remain a threat to the rest of the world.

1.5 Prevention phase: preparatory stage

- African countries became highly aware of the risks of HPAI in 2004, following outbreaks in Southeast Asia
- Thereafter, a Joint AU-IBAR/ FAO symposium on HPAI prevention and control in Africa (Nairobi, September 14-16, 2005) and the 7th Conference of the Ministers responsible for animal resources (Kigali, October 31 - November 2, 2005) were held and recommended:
  - Strengthening of surveillance capacities
  - Preparation of HPAI emergency preparedness plans.

1.5 Prevention phase: preparatory stage (continued)

- In disease free countries, the main preventive measures taken are:
  - Ban of importation of poultry and poultry products (from infected countries)
  - Setting up of national inter-ministerial multidisciplinary technical committees to:
    - Coordinate the prevention and control of HPAI
    - Supervision and drafting of emergency preparedness and contingency plan
    - Some countries are only now finalizing their plans.

1.6 Prevention Phase: issues in emergency preparedness plans

- Absence of precise data on poultry population (location, size, production system and poultry products)
- Some lacked realism, coherence and applicability because they were not conceived as action plans with different scenarios according to the possible epidemiological situations that could occur.
- Most countries did not allocate financial resources to the identified activities in the EPP
- Most EPPs have not been subjected to simulation exercises with the exception of Algeria, Guinea, Morocco, and Senegal

1.7 Containment and Eradication phase:

- Although the origin of the first confirmed outbreak of HPAI, H5N1 in Nigeria is still the subject of hypotheses, trade in poultry and poultry products and movements of live birds seem to have played a major role in the introduction and spread of the disease on the continent.
- The involvement of wild birds could not be proved in spite of extensive searches for H5N1 virus in migratory bird samples collected in various bird resting areas in nine different countries (Morocco, Egypt, Ethiopia, Kenya, Malawi, Mali, Senegal, Tanzania, Uganda, Zambia, Chad and Tunisia).
- Except for the Cameroon outbreak, there is more than 99 % agreement between strains isolated in Sudan, Côte d'Ivoire, Burkina Faso and Nigeria.

1.8 Containment and eradication: Control measures

- Intensive community awareness and epidemiological surveillance for early detection and early reporting of new cases;
- outbreak management through institution of control measures including quarantine of infected or suspected zones, culling and destruction of infected or suspected poultry and disinfection of premises and materials;
- controlled movement and ban on trade in poultry;
- management of the socio-economic impact at the poultry owners' level (compensation);
- vaccination;
- minimizing risks and care of human flu cases of avian origin;
- improved bio-security at farm level and on live bird markets;
- updating of zoosanitary rules and protocols.

1.9 Key issues that have affected containment and eradication

- limited intervention capacities of affected countries (in terms of human, technical, financial and material resources);
- inexperience in the management of such zoonotic crises, including absence of crisis communication centres;
- weak epidemio-surveillance networks;
- Poor coordination between various services; absence of direct chain of comand within veterinary services;
- disorderly use of vaccination as a tool in the control strategy;
- inability to implement basic bio-security measures at farm level and in live poultry markets;
- failure by many countries to timely and/ or adequately revise rules pertaining to zoosanitary measures;
- poor management of HPAI socio-economic impacts leading to delays in release of funds for compensation.
- Others include: cultural practices in poultry keeping; poor infrastructure; and inadequate political goodwill and government support.

1.10 Containment and eradication: The pending threats of HPAI in Africa

- With the exception of the prevailing situation in Nigeria and in Egypt, an explosion of HPAI outbreaks throughout the African continent as predicted by many international experts did not happen in spite of the limited operational capacities of national Veterinary Services.
- However, the situation still remains worrisome.
- It is feared that the infection will spread throughout the entire African continent and the Arabian Peninsula.
- The H5N1 virus is likely to cause heavy economic losses as much at the national level as at the rural family level.
- The proximity of poultry and people in the villages increases the risk of human cases.
- The diversity of the ecosystems infected leads to the fear that the disease may become endemic, meaning that it may quietly circulate only to re-emerge given favourable climatic conditions or an encounter with a highly susceptible animal population.

2. Rift valley fever: Background

- RVF was first described in sheep in the early 20th century, and the virus responsible was first isolated in humans in Kenya in 1930.
- In livestock, it causes abortion and death.
- Livestock epizootics occur after heavy rainfall and flooding that result in hatching of *Aedes* mosquitoes (thought to be the initial vector and inter-epizootic reservoir of RVF) and other vectors that feed on nearby mammals.
- To some extent, humans like animals acquire RVF through bites from infected mosquitoes, but more frequently, through exposure to the blood, body fluids, or tissues of infected animals during slaughter or through veterinary and obstetric procedures.

2.1 The RVF situation in East Africa

- The first recorded outbreak of RVF in Egypt in 1977 caused an estimated 200,000 human cases with some 600 deaths as well as large numbers of deaths and abortions in sheep, cattle and other livestock species.
- The outbreak of the disease in East Africa in 1997- 98 not only caused livestock losses and human deaths but also seriously disrupted the valuable livestock export trade to the Middle East estimated at several million dollars per year.
- The recent outbreak in East Africa (December 2006- March 2007) estimates the losses as result of trade embargos, local consumer preferences and direct losses due to deaths and abortions in livestock in Kenya alone at US $ 45,000,000 (Pers. Comm.- DVS Kenya, 2007).
- A total of 404 human cases with 118 deaths were reported in Kenya, 100 cases with 48 deaths in Somalia and 3 deaths in Tanzania (Unpublished data)

2.2 Key issues in the recent RVF outbreaks

- An early warning was given several months in advance; the forecast turned out to be remarkably accurate.
- As part of lessons learnt following the 1997/98 outbreaks in eastern Africa (after the El Nino rains), the FAO, UNDP and AU/IBAR jointly organized workshop on "Reducing the Risk of Rift Valley Fever Virus Transmission in the Horn of Africa" in Nairobi (June 2001) for the Horn of Africa countries.
  - The workshop reached consensus on a regional policy for the control of RVF, that would at the same time minimize the risk of transmitting the disease to trading partners (UNDP 2001).
- In spite of all these, the response to the recent outbreaks was wanting.
  - The mobilization of personnel and resources, the arrangements necessary to cope with the epidemic should have been in place before the rains started, and the vaccination campaign should have been in full swing.
  - The cost of the disease to the affected communities, livestock sector, meat industry, exports and the economy are astronomical.
  - An early, pre-emptive campaign would have minimized the cost.

3.International Partnership in the HPAI Crisis management

- The role of Interafrican Bureau for Animal Resources (IBAR)
- Partnerships involved in the HPAI crisis

3.1 The role of Interafrican Bureau for Animal Resources (IBAR)

- The IBAR is the specialized technical office of the African Union (AU) responsible for spearheading and coordinating all programmes in Livestock development through six inter-related mandates, namely:
  - control of major trans-boundary animal diseases (TADs);
  - improvement of animal genetic and feed resources;
  - enhancement of trade and marketing of livestock and livestock products;
  - development of livestock information and communication technology;
  - development of capacity and improvement of quality assurance of livestock and products of animal origin;
  - harmonization of livestock related policies and legal framework in member states.
- IBAR has played the lead role in coordinating all preventive and intervention measures directed at HPAI on the continent in partnership with the FAO, OIE, ALive, World Bank, EC, WHO among others.
- Through the PACE programme, IBAR helped the Horn of Africa countries to reach consensus on regional policy for the control of RVF

3.2 International Partnership

- The African Development Bank (ADB)- support to some of the infected countries and those at high risk to the tune of 6.5 million US$
- Through the ALive partnership, an assessment of financial needs and gaps was carried out and the results of the study presented at the Fourth International Conference on Avian Influenza in Bamako, Mali, December 6-8, 2006 (pledging session).
- Based on a continental strategy, IBAR formulated a project "Support Programme to Integrated National Action Plans (SPINAP)" to coordinate national action plans. The EC has approved to finance the project to the tune of 21.5 million Euros through the signing of Financing Agreement on 30th April 2007
- The Global Framework for Trans-boundary Diseases (GF-TADs), a global collaboration between OIE and FAO has also assisted infected and countries at high risk.

3.2 Partnerships-- continued

- IBAR and ILRI with financial support from GTZ organized training courses on rapid detection of avian influenza virus for veterinary and medical laboratory staff from all the African Regions.
- Technical Cooperation Projects (TCPs) at National and Regional levels were set up with FAO to support the preparation of National emergency plans.
- United Nations Systems for Influenza Control (UNSIC) with global mandate to coordinate HPAI crisis, World Health Organisation (WHO), UNICEF, World Bank…. have played a significant role in the Communication Campaign and the mobilisation of different resources to assist the Continent.
- The People's Republic of China has availed technical assistance teams for experience sharing on prevention and control of HPAI.

4. Success stories

- The epidemio-surveillance network set up by the PACE programme (2000 – 2007) in 30 sub-Saharan countries easily adapted and took on board HPAI, and has potential to improve and expand to other sub-Saharan countries
- National governments responded positively in developing and implementing emergency preparedness plans, even though there is still a lot of room for improvement
- Coordination of Donors and international technical institutions' activities through the ALIVE Partnership

4.Success stories- continued

- Experience of Regional Animal Health Centres set up by IBAR, OIE and FAO to better coordinate their activities in Africa, including the establishment of a virtual vaccine Bank to meet the needs of infected countries. The centre for Western and Central Africa regions is already operational
- Ecosystem/ regionally coordinated and harmonized approaches for the control of TADs are promising, e.g. the final eradication of rinderpest from Africa (being undertaken through IBAR's Somali ecosystem rinderpest eradication coordination unit (SERECU)) .

5. Lessons learnt

- The partnership within countries between Animal Health and Public Health Services should be reinforced (information sharing, diagnostics training etc...) and properly coordinated.
- There is a need for further research into the epidemiology, the surveillance and the vaccination against HPAI in Africa; it will allow to optimize resources for the prevention and control of the disease.
- The epidemio surveillance Network put in place by PACE in 30 sub saharan countries can be easily adapted to the active surveillance of poultry diseases. It should be adjusted.
- A national emergency Fund should be set up in each country to address the issue of timely compensation
- At regional level the activities of RAHC should be backed by a regional reference Laboratory.
- IBAR in collaboration with PANVAC and OIE should continue to pursue the establishment of a continental virtual vaccine bank.
- Improve the Partnership with international Partners for resource mobilisation

6. Conclusions

- The outbreaks of HPAI in Africa have been an opportunity to assess the response capacities and major sanitary crisis management of African Veterinary Services.
- The incursion of HPAI was not followed by rapid spread within infected countries where poultry densities were low, but the risk for spread to the entire African continent is higher than ever before.
- There are still several grey areas on the epidemiology of HPAI H5N1 in Africa.

6.Conclusions- continued

- Success in containment and eradication is a function of lessons learnt and how to harness them into regional integrated emergency preparedness and action plans.
- Current technologies now allow for fairly accurate predictions on climatic risk factors for RVF occurrence.
- Are countries at high risk of the disease willing and committed to explore and put to good use these opportunities?

Thank you for your attention!