

**« One Health »: A key concept for
complex health problems
management in the Global South**

**The One Health Approach is essential in the
Global South!**



Introduction

The One Health concept invites to interdisciplinary and intersectoral action in the management of complex health problems at the interface between humans, animals and their common environment.

On November 3, 2016 was celebrated by several national and international organizations as the 1st International Day dedicated to one Health. The purpose of this day is to promote at the global level, various collaborative initiatives between disciplines of human health, animal health and environmental health, at the operational level, as well as at the level of research and teaching.

Recent outbreaks, such as pulmonary plague in Madagascar, Rift Valley fever and Avian Influenza in West Africa, but also recurrent

food insecurity crises and the emerging disaster of antimicrobial resistance; all of these crises remind us of the need of integrated approaches for the efficient management of complex health problems.

As part of the celebration of the 2nd International One Health Day, the network of graduates of the Master of specialization in Integrated Management of Health Risks in the Global South – GIRISS-Pro (organized by the University of Liège, the Université Libre de Bruxelles and the University of Namur in Belgium, with the support of many partners, including CIRAD, FAO and CSRS), have undertaken the elaboration of a technical note addressing recent health crises in their respective countries in order to contribute to the promotion of the One Health concept in the Global South. This note aims to highlight the importance of an integrated approach in health crises management, and It specifically addresses four themes representing complex health problems in the Global South, namely:

- Zoonotic diseases, including plague and avian influenza;
- Neglected tropical diseases, related to access to water, sanitation and hygiene (WASH);
- Antibiotic-resistant germs;
- Food insecurity and malnutrition.

Plague and the importance of an integrated approach in Madagascar

Plague is a disease caused by the bacteria *Yersinia pestis*, carried by rats and transmitted to humans by the bite of infected fleas.

Three forms are mainly described: bubonic, pulmonary and septicemic plague.

In the past 15 years, about 40,000 cases of plague have been reported worldwide, according to the World Health Organization (WHO). The important outbreaks are in Madagascar, the Democratic Republic of the Congo, Tanzania and Peru. Plague outbreak in Madagascar is mainly related to the virulence of the bacteria and its sudden reappearance after a period of latency.

There is also the difficulty of managing the dynamics of infection and the environmental, cultural and behavioral factors of its spread.

For example, funerary rites and the turning of the dead, as well as the skepticism of some communities about the existence of the disease, facilitate the transmission in rural areas. The psychosis caused by this epidemic also makes it difficult to control information and carry out management, prevention and prophylactic measures.

If the re-emergence of plague outbreak is linked to the country's precarious socioeconomic and climatological situation, this situation calls also for an urgent

awareness as for the public management of health risks. Without integration of the actions of the departments concerned, health technicians find themselves isolated in their efforts, unable alone to establish an optimal strategy of control.

From the control to the elimination of plague epidemic, the control strategies developed should focus on an integrated approach, bringing together panels of experts from different disciplines to support the Ministry of Health in developing action plans to respond to the complexity of the crisis.

This interdepartmental committee should include physicians, veterinarians, epidemiologists, biologists, risk managers, socio-anthropologists, hygienists and members of local communities in order to focus intervention on shared representation of the problem and on common understanding of the situation.

Broadening the framework for reflection, considering the interface between human health, animal health and environmental problems is beneficial because of the mutual enrichment of knowledge derived from.

These exchanges will create dynamic that will allow the development of better methods of surveillance, prevention and response to such outbreaks. 8366

Integrated strategy: an imperative for the control of Avian Influenza in East Africa

Highly pathogenic avian influenza (HPAI) is an infectious, highly contagious disease affecting domestic and wild birds caused by viruses of the family *Orthomyxoviridae*.

Since its emergence in Southeast Asia in the early 2000s, HPAI has caused significant global damage, both economic and human.

In Africa, particularly in Uganda, Nigeria, Ivory Coast, Burkina Faso, Niger, Ghana and Togo, this threat has encouraged governments to take preventive measures to protect human populations and minimize risks of infection of domestic poultry, birds and humans.

The impact of HPAI can be understood in three ways. The first is related to the high mortality of animals that it entails, carrying whole farms in a few days. The second is related to the transmission from animal to humans, for whom the infection can be fatal, with the mutations of the virus posing the risk of a pandemic through transmission from man to man. The third aspect is economic loss, due to trade restrictions and the costs of control and security standards.

Thus, after the outbreak notified by Uganda in 2016, countries in the region (Kenya, Rwanda, Burundi and Congo) took a number of measures, including the ban on the

importation of poultry and poultry products from Uganda.

Applying an integrated approach is crucial in the management of HPAI outbreak. Thus, the establishment of multi-sectoral platforms of coordination and monitoring of interventions would enable countries to enhance local skills, pool human, technical and financial resources, particularly in disease surveillance and response.

Pooling laboratory capacity will reduce the costs of surveillance, enable the rapid confirmation of suspected cases, and the identification of strains involved, and in this way will optimize control strategy.

Furthermore, the information sharing on animal and public health events is central to enabling a rapid and concerted response. Avian influenza, also highlights the need to control human health risk at its animal source through a safer organization of the poultry sector.

In addition to this interaction between sectors, the management of avian influenza calls for better cross-border coordination. It is thus necessary to adapt the control strategy by creating a legal framework for collaboration between neighboring countries, through cooperation structures or regional animal health projects.

One Health approach and health risk management related to water and hygiene

The need for interdisciplinary and intersectoral integration for health risks management is not limited to zoonoses alone. It is interesting to consider the operational definition of the One Health concept, pragmatic, which aims by closer cooperation between professionals from different sectors involved to create added value in terms of health, social and environmental benefits, and finances, by sharing logistics costs.

Thus, it is commonly accepted that the persistence of neglected tropical diseases (NTDs) remains highly dependent on access to drinking water, sanitation and hygiene, grouped under the acronym WASH (Water, Sanitation, Hygiene).

The need to improve WASH in endemic areas is often demonstrated and advocated for sustainable elimination of schistosomiasis, soil-transmitted helminthiasis, lymphatic filariasis, trachoma and guinea worm. Indeed, the treatment alone will not break the transmission cycle. Improvements in WASH and appropriate behaviors are essential to ensure sustained control for the elimination of many NTD.

There is also the fact that the endemicity of some NTDs results from the perception and some people's behavior of populations, most often dictated by culture or poverty. Thus, to

better lead control strategies, raise awareness among communities and promote the acceptability of interventions, it is important to be immersed in the socio-anthropological realities of communities.

In endemic countries, to control or even eradicate NTDs, national programs are often set up. The control strategies developed remain focused on the disease most often forgetting or not taking into account the factors of persistence of these diseases linked to the ecosystem of the beneficiary communities. Thus, the One Health approach, for a sustainable control of these diseases, requires moving from a "health system" vision, based on the patient, to a more integrated vision through control strategies using ecosystem approaches. Intersectoral, these strategies involve, alongside the health sector, among others, those of hydraulics, sanitation and education. Thus, the integrated approach aims to exploit as much as possible existing or potential synergies between different sectors for the same objective. However, a harmonization of objectives between sectors is necessary to motivate these collaborations and to achieve convincing results.

Antimicrobial Resistance: A Nightmare for the Global South

Antimicrobial resistance (AMR) is characterized by failures of antibiotic treatments. It is a natural biological phenomenon, dangerously accelerated by an abusive or poorly adapted use of antibiotics.

It affects poor and rich countries alike and concerns the human and animal health sectors as well as the environment, calling for an interdisciplinary and multisectoral approach.

In human health, many factors contribute to the misuse of antibiotics. The first is access to antibiotics: access on the one hand difficult to quality drugs and prescriptions of the doctor, access on the other hand easy to informal markets, where drugs are poorly preserved or simple counterfeits. Self-medication on this basis is dramatic. In addition, the lack of diagnostic capacities leads physicians to prescribe without being assured of the bacterial strains involved in the infection or the sensitivity of the causative organisms.

Finally, there is a lack of compliance with prescriptions, caused by ignorance, misunderstanding or even the desire to save drugs that are so expensive for the poorest households.

In animal health, many countries in the South are confronted with a shortage of veterinary services, lack of qualified field workers, the use of antibiotics in breeding as growth factors, the lack of compliance with waiting

period after treatment, resulting in the presence of antibiotic residues in animal products. In addition, the release of waste from pharmaceutical industries and hospital, livestock manure containing resistant germs, and the misuse of the same classes of antibiotics in human and animal medicine is among the aggravating factors.

For 20 years, no new antibiotic has been discovered. The cost of development has become prohibitive for companies that cannot ensure substantial gains. Indeed, the strategic nature of possible new molecules would limit its use and therefore sales volumes. As far as alternatives are concerned, people's reluctance to vaccinate is more than ever a topical issue.

Projections predict that by 2050 antimicrobial resistance will result in 10 million human deaths each year. Countries around the world have adopted a global plan of action against AMR developed by WHO, FAO and OIE.

The approach advocated is logically intersectoral in the face of such a complex problem. Resuming control for a sustainable use of antibiotics and monitoring the emergence of RAM is therefore a major challenge, which will necessarily apply a One Health approach, if we do not want to pay the price of inaction.

Food and nutrition security: realistic goals in Africa

Food security is defined as the situation where all human beings have, at all times, physical and economic access to sufficient, safe and nutritious food to meet their energy needs and dietary preferences for healthy and active life¹.

Worldwide, the number of food insecure people continues to increase. About one in ten people suffers from food insecurity every day.

The problem persists despite the prioritization of hunger by organizations at the global level, which have classified it as the second issue in the Sustainable Development Goals (SDGs). Except for occasional causes linked to epidemics and disasters, hunger is a normal situation in the daily life of poor families.

The causes of food insecurity remain complex and interrelated, whereas at present, agronomists, nutritionists, human and animal health specialists and others are working circumstantially, each on their own, to find a solution to hunger.

These isolated actions are inefficient, leading to the persistence of hunger. It then becomes urgent to set up a strategy enabling to join efforts of these actors for a fair and sustainable human nutrition.

In other words, it's about putting the One Health concept into practice. The added value of such an approach lies in the integrated vision of coordinated actions on the field:

Food production (plant and animal), management of its environmental impacts, targeted food assistance, understanding of the cultural and economic factors of hunger, control of food safety, surveillance and management of malnutrition cases, raising awareness among households and building capacity.

To this end, the involvement of national and international policies in promoting collaboration and communication between the actors of food and nutritional security is imperative.

Thus the concept, contextualized here, involves the development or reinforcement of integrated, intersectoral and interdisciplinary approaches, taking into account that animal and environmental health are the supports for the quality and safety of human nutrition and therefore public health.

Any health policy addressing malnutrition should, in application of the One Health concept, jointly consider actions carried out in the same frame by other sectors, such as agriculture, livestock and education.

¹ FAO. 1996. Déclaration de Rome sur la sécurité alimentaire mondiale, Sommet mondial de l'alimentation, FAO, Rome.

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