

**FAO-OIE- WHO Joint Technical Consultation on  
AVIAN INFLUENZA  
AT THE HUMAN-ANIMAL INTERFACE**

7 - 9 October, 2008, Verona, Italy

**Conclusions, Gaps, and Proposed Actions**

**CONCLUSIONS & GAPS**

**The world faces continued threats from avian influenza and other zoonotic diseases, which can only be effectively minimized through new strategies of collaboration focused at the human-animal interface.**

**Collaboration and coordination**

Much has been learned about controlling avian influenza in animals and people, and the world is better prepared to confront influenza threats. However, important gaps remain both in scientific knowledge (e.g. modes of transmission, occupational risk, baseline exposure rates, role of live animal markets) and in the rational and sustainable implementation of control measures. The animal and public health sectors need to coordinate and complement their research as well as their disease control and prevention activities in a more formalized manner and to the fullest extent possible.

**Surveillance and use of data**

The circulation and continuous evolution of potentially zoonotic animal influenza viruses in birds, humans, and other hosts poses an ongoing public and animal health threat. Along with H5N1, other animal influenza viruses also have or could develop the characteristics necessary to infect humans and potentially become a pandemic strain. The prevalence and distribution of all animal influenza viruses have been insufficiently characterized on a global level, and is likely to be underestimated.

Some systems and tools for virological and epidemiological surveillance and monitoring of animal influenza viruses in animal and human populations exist. However, influenza surveillance needs to be expanded to integrate other relevant private and public institutions so that circulation, evolution, dynamics, and risks can be fully understood and analysed, sustainably and in real time.

**Transdisciplinary research on zoonotic risk**

Controlling avian influenza in poultry is the primary method to reduce human risk from zoonotic infections. Understanding the measures aimed at preventing and controlling HPAI H5N1 in poultry has improved greatly over the past four years. In many countries measures have been effectively applied, decreasing the number of human cases being reported. However, the specific human activities and behaviours, as well as host, virus and ecologic and country-level factors (e.g. the role of live animal markets), associated with human zoonotic influenza have not been identified sufficiently to support strategies to eliminate public health risk. Further data collection, analysis, and research both within and between the human and animal health sectors are critical to fully understand the scientific basis for zoonotic risk.

**Sharing of information and technical tools**

There has been a dramatic improvement over the past few years in both the collaboration between the animal and public health sectors and the availability of technical tools for monitoring and understanding influenza (e.g. antigenic cartography, shared databases). However, mechanisms for facilitating broad and timely access to information and tools are not adequately developed to ensure early detection of, rapid assessment of, and response to threats from influenza viruses. The implementation of more effective prevention and control tools and strategies can only be achieved through a more effective and timely exchange of genetic, antigenic, and epidemiological data on these viruses.

**Addressing other emerging zoonoses**

It is clear that avian influenza H5N1 is just one of a number of emerging zoonoses, and that experience with H5N1 at the human-animal interface can be enormously instructive and insightful in meeting the challenges of future emerging diseases. The development of effective best practices, tools, and systems to control and prevent H5N1 can be leveraged and applied to other zoonoses.

There is now recognition of the benefits of rapid response, multidisciplinary teams, global collaboration, strong science and research, integration of reporting and surveillance, sharing information and materials, linking human and animal health, respecting cultural and social difference and behaviors, working with different systems and roles associated with animal and public health, and recognizing the complexities and interdependence of addressing multiple emerging disease threats.

## **SHORT TO MEDIUM TERM ACTIONS**

### **Collaboration and coordination**

- Promote and strengthen ongoing collaboration (e.g. joint evolution working group, technical exchange of scientific information, national coordination of sectors) and identify novel areas for additional technical collaboration.
- Identify new strategic partners to better address gaps in knowledge at the human-animal interface.

### **Surveillance and use of data**

- Broaden the timely collection of both HPAI and LPAI influenza viruses and associated epidemiological data to ensure that the full scope of hosts, ecologies, and geographic areas are represented (e.g. including environmental monitoring in markets, rice paddies, backyards, and other areas of increased risk).
- Expand partnerships with the private sector and improve capacity where necessary to ensure adequate influenza surveillance.
- Support research on diagnostic tests for influenza in poultry and humans aimed at improving consistency, sensitivity, rapidity, and cost-effectiveness.
- Use virological surveillance data to inform continual re-assessment of diagnostic reagents and vaccines, monitor virus evolution and antiviral resistance, and assess risks of emergence of potential zoonotic and pandemic strains.

### **Transdisciplinary research on zoonotic risk**

- Increase and improve data on zoonotic influenza in humans through standardized data collection, and additional case control and serological studies in the field.
- Develop tools and conduct integrated analysis of zoonotic risks from animal influenza viruses, and translate technical knowledge gained into practical strategies and recommendations at the interface.
- Determine the public health risks from live poultry markets and assess the impact of interventions at different levels of the market chain.
- Improve understanding of the pathogenesis and modes of intra- and inter- species transmission of zoonotic influenza viruses through more detailed studies in humans and better animal models, including improving understanding of the tissue distributions of virus receptors and their role as barriers to transmission, and use knowledge to enhance animal and public health risk mitigation strategies.
- Improve understanding of the factors that drive the evolution of animal influenza viruses in poultry, other birds, and mammals.
- Promote full genome sequencing of isolates and ensure continual updating of information on all relevant influenza virus mutations and reassortments.
- Determine the zoonotic potential of swine and other animal influenza viruses of various subtypes.
- Develop and validate more sensitive and specific tests for detecting antibodies to avian influenza viruses in non-avian species including humans.
- Incorporate experts in social sciences and communication to ensure that interventions and recommendations to decrease public health risks take into account cultural and socioeconomic aspects that will improve the efficacy of implementation.
- Monitor the impact on public health of measures to reduce infections in poultry, such as poultry vaccination, and strive to continually improve such measures.

### **Sharing of technical tools and information**

- Continue to strengthen and improve existing mechanisms and systems for information collection, sharing, and analysis maintained by OIE and FAO (including OFFLU) and WHO (such as GLEWS) and facilitate and promote interagency collaboration wherever possible.
- Establish real-time communication systems to widely share and discuss technical information among all global, regional, and national partners and stakeholders.
- Find innovative solutions to improve technical collaboration and effective information and material sharing.

## ACTIONS FOR BROADENING

- Promote a more holistic and collaborative approach to improve both human and animal health and build more effective teams and partnerships, especially through strengthening of existing institutions.
- Promote study of the ecology of emerging zoonoses and construct new interventions and prevention strategies based on scientific understanding of the effects of ecology on diseases at the interface.
- Encourage the further expansion and refinement of the GLEWS system and the GLEWS platform for sharing information among the organizations (e.g. consider including laboratory and outbreak investigation team training and developing internships).
- Move towards coordinated development of diagnostics and reagents for use across animal and public health laboratories wherever appropriate, to ensure improved standardization, comparability, and accuracy of results.
- Recognizing the fact that many infectious diseases of humans have emerged from previously unrecognized pathogens in wildlife, leverage the concept of “Big Science” by using novel approaches to pathogen discovery, the use of new informatics tools, and open sharing of information.
- Devise and apply tools to monitor the efficacy of implemented strategies towards a better response capability for emerging diseases of importance.