

One Flu Roadmap: An Outcome of the One Flu Strategic Retreat

In recent years, the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE) and the World Health Organization (WHO), in collaboration with the United Nations Children’s Fund(UNICEF), the United Nations System for Influenza Coordinator (UNSIC) and the World Bank developed a joint strategy addressing risks associated with emerging and re-emerging infectious diseases. In 2008 these organizations published “Contributing to One World, One Health – A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface”.¹ This document provided a framework for countries to consider regarding the control of zoonotic, emerging and re-emerging diseases and ignited a series of interdisciplinary meetings aiming at identifying means of implementing action plans within the scope of the document.^{2,3,4,5,6} Global recognition of the importance of the fundamental linkages between human and animal health and their relevance to public health concerned members of both disciplines.⁶ Involvement of key scientists and policy makers in these activities resulted in global recognition of the importance of the fundamental linkages between human and animal health and their relevance to public health. The resultant “One Health” approach urged greater interdisciplinary collaboration and communication.

One of the drivers of these events was the ongoing H5N1 panzootic, with its attendant human and animal suffering and its impact on food security. The “One Health” concept took on a new urgency with the unexpected emergence of the H1N1 2009 pandemic in Mexico. This served as an important reminder that the convergence of influenza viruses, people, animals and the environment are inextricably linked and require a novel, integrated approach. As such, the concept of “One Flu” has been identified as an example and model for the “One Health” approach.

The emergence and spread of the pandemic H1N1 2009 virus from an animal reservoir raises questions regarding the future approach to influenza virus infections. Studies of the pandemic 2009 H1N1 influenza virus identified that the eight genomic viral components originated from swine influenza viruses that had been circulating in both the eastern and western hemispheres. Detailed analysis revealed that the 2009 H1N1 viral genome consisted of a mixture of gene segments with more distant origins in avian, human, European swine and North American swine hosts. The events of 2009-2010 served as a contemporary lesson illustrating the rapid spread of a novel influenza virus in a globally susceptible human population. The fact that the 2009 H1N1 pandemic virus’ gene segments were all most closely related to those of swine influenza viruses reinforced the need for surveillance at the animal-human interface and the need for sample and data sharing between public health and animal health communities. Events such as these require a “One Flu” approach.

Sharing of information across disciplines is a cornerstone to develop a new integrated approach. In recent years the sharing of viruses and information across human and veterinary health disciplines has greatly improved, and was critical during the initial management of the H1N1 2009 pandemic. However old and new challenges continue to exist and resolving these challenges is dependent upon understanding and addressing the barriers facing the scientific, medical and public health communities as emerging and reemerging infectious diseases such as influenza are confronted. Cooperation between

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human and animal health experts is needed to improve surveillance, diagnosis, treatment, prevention and control of cross-species transmission of influenza viruses. Influenza remains one of the most tangible and significant threats to human and animal health.

The “One Flu” Strategic Retreat, convened February 1-3, 2011 in Treviso, Italy was jointly organized by the U.S. Centers for Disease Control and Prevention and the Italian Istituto Zooprofilattico Sperimentale delle Venezie. The forum brought together participants from multiple disciplines throughout the world to engage in a strategic discussion focusing on “One Flu” as the building block to a successful “One Health” approach.

Forty-six participants representing the UN agencies, WHO, FAO; the OIE; the World Bank; and influenza experts from public health, veterinary medicine and academia actively participated in the meeting. Discussions centered on the retreat objective: to promote the timely sharing of surveillance data and viruses from swine, avian and human populations with the ultimate goal of improving both human and animal health. Sessions included updates regarding influenza viruses identified at the animal-human interface; identifying approaches to overcome barriers to virus sharing between animal health and human health; exchanging information on ways to promote virus sharing; and defining ways to improve pre-pandemic candidate vaccine virus selection for human vaccines, utilizing an evidence-based approach.

Participants acknowledged opportunities for added value through data sharing between animal and public health communities, specifically noting the benefits of systemic surveillance systems, enhanced communications and a “One Voice” partnership. The “One Flu” approach could also serve as a model for other zoonotic infections, including enhanced working relationships between animal and public health representatives, possible dual use of diagnostic and research facilities and providing real time information for public and animal health responses.

Group discussions addressed barriers and perceived disadvantages of data sharing. Key barriers noted were:

- 1) appropriate recognition and scientific credit for those involved with gathering the information,
- 2) basic mistrust and suspicion on the part of critical players, essentially the fear that stronger groups may exploit information independently, and
- 3) the need to obtain support from the multiple entities involved in timely data sharing, including donors and international organisations.

Other issues discussed included the political will and financial resources to promote joint projects and studies; the need to balance public and private interests, including possible trade barriers and other negative repercussions; the lack of public health, veterinary health and/or information technology infrastructure in much of the world; lack of a productive working relationship between the animal and human health sectors at a local level; competing issues, i.e. the fact that influenza is not the only animal

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or human health issue facing the global community; and the failure to recognize the benefits of a “One Health” approach. Concerns were also expressed regarding inequity in access to vaccines, antivirals and other interventions. Finally, it was agreed that change itself represents a challenge and that some scientists may be reluctant to establish a new working methodology.

Ways to improve data sharing were discussed. The vision for the future included the need to advocate for funding; appropriate and inclusive recognition for data cited and public acknowledgement of resources expended to gather such information. Several participants commented that sharing of information is not only based on trust, but on common experiences and personal contacts.

Group consensus identified five activities to advance the “One Flu” concept. Action points were allocated to key opinion leaders who agreed to proactively move the agenda forward. These activities include:

- (1) **Development of a manuscript on ‘Repositioning Influenza’** to ensure a critical and ongoing integrated approach engaging the animal and public health communities addressing influenza preparedness and response efforts. The lessons learned from recent experience with pandemic H1N1 2009 reaffirm the continued threat of pandemic influenza, and these lessons provide opportunities for incorporating and enhancing our collective response. Such a strategy requires a cross sectional approach, ultimately ensuring a positive impact on the public good.
- (2) **Development of an Influenza Risk Assessment Tool**, recognizing that influenza pandemics and epidemics are unpredictable and that a better strategy is needed to respond appropriately to protect the public health. A risk assessment tool will be developed which will have the necessary surveillance elements defined and could be signal activated, widely available internationally, and can be used to identify data gaps to drive surveillance and research needs. Such a tool can also be used to compare viruses and provide the necessary signal that will drive more specific pre-pandemic vaccine development.
- (3) **Data management-Data Banks**, which will include: guidelines to enhance linkages; standardize terms; establish minimal data elements; address confidentiality concerns around the closed versus the open data bases; develop data filtration tools; validate results and secure long term funding for this endeavor.
- (4) **Long Term Management Data Needs**, recognizes the inequities and lack of benefits to data sharing, especially amongst the scientists in the developing countries and more junior level scientists. If the data is deposited in a public data base prior to publication (shared for the public good in a timely manner) and is used by others who are not involved with gathering the information but who publish first there will be conflicts with respect to ownership. To ensure continued data sharing, efforts to safeguard against scientific pirating of information must be adopted.
- (5) **Building Partnerships for Better Integration of Public and Animal Health New Way Forward** requires both short and long term goals. Short term, pre-established communication channels for both notifiable and non-notifiable disease entities are necessary at the local, national and international levels. Pre-established response plans containing templates for best practices, communications and table top scenarios are critical to this process. Long term efforts require reaching out to other disciplines, who may not be currently engaged in this process, including industry and environmental scientists. Cross

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training, exchange programs and fellowships in “One Health” were noted as possible ideas to pursue. Meeting attendees agreed to assume responsibility for outreach and educational endeavors, within the context of their own network at relevant national and international meetings, to obtain buy in for the “One Flu/One Health” concept.

The meeting attendees left enthusiastic and stimulated by the opportunities at hand. This is not a stagnant discussion, but a dynamic process, which cannot move forward rapidly enough, given the ever-evolving world of microbes in which we live. Meeting attendees agreed to continue to champion the above concepts and work groups were established. Advocating for “One Flu” will be achieved by reaching out to our partners at the local, regional, national and international levels. This increased awareness and new mindset will ultimately help ensure that we are better prepared globally to meet the next influenza pandemic or emerging infectious disease crisis.

Presentations from this meeting, along with this executive summary, are posted at:

<http://www.cdc.gov/onehealth/meetings.html#four>

Foot notes:

1. <ftp://ftp.fao.org/docrep/fao/011/aj137e/aj137e00.pdf>
2. <http://un-influenza.org/node/4043>
3. <http://www.cdc.gov/onehealth/archived-meetings/march2009-may2010.html>
4. http://www.fao.org/avianflu/en/conferences/verona_2010.html
5. http://www.fao.org/avianflu/en/conferences/verona_2008.html
6. <http://news.idsociety.org/idsa/textonly/printall.php?id=idsa20110101>