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Since 2006, Dr Mumford has been working at the World Health Organization in Geneva, initially with the Global Influenza Programme as the project lead for human-animal interface influenza activities and liaison with the international agencies in WHO's influenza work. Her current activities include the integrated assessment of influenza risks at the human animal interface and rapid risk assessment for zoonotic diseases generally, the facilitation of cross-institutional collaborations and networks, and development and implementation of cross-sectoral approaches to address health risks at the human-animal interface.

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CURRENT STATE OF GLOBAL SURVEILLANCE :

Public Health, Animal Health and the Interface

The Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), and the World Health Organization (WHO)

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Why do global surveillance?

Inherent in the ability of The Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), and the World Health Organization (WHO) - and the world - to prepare for, manage, and respond to threats to human and animal health in an appropriate way is the ability to identify and assess acute animal and public health events as they emerge and evolve. Therefore, having quality and timely animal and human event-based information, as well as information on the disease itself and context in which the event is occurring, are important, not only for health stakeholders but also for the general public worldwide. This information is the key component required by animal health and public health officials to assess risks of a potential health threat.

When faced with acute animal and public health events identified through event-based as well as routine or indicator-based surveillance systems in both humans and animals, the agencies must appropriately gauge their international responses, devise practical options to mitigate risks, advise countries on best options for local response and provide technical assistance as requested, and

effectively communicate risks to stakeholders and the public. To do this, the agencies must know what kind of threats to health are ongoing in the world and continually assess the likelihood of occurrence and potential animal health and public health impact of these events.

Therefore, event-based surveillance at the global level is considered to be the systematic collection, analysis, and interpretation of data and information for guiding institutional action as opposed to collecting information for its own sake, or for research.

Focusing capacity building on surveillance systems strengthening and focusing health research agendas based on international surveillance gaps can also be seen as a surveillance-based action.

Key questions to guide improvement of global level surveillance systems include:

- How do we identify what information is important?
- How do we actively and efficiently engage national and regional systems and incentives for countries to improve transparency and timely disease reporting

- How do we incorporate information from routine/indicator based national surveillance systems?
- How can we share information with those who need it, and with the public in the most appropriate and impactful way?

Event-based surveillance at WHO

As mentioned above, WHO can only mount an appropriate and timely response to acute public health events if it can identify events early and rapidly respond to the public health risks associated with the events. WHO's global event alert and response to acute public health events is built on national capacities in the detection, investigation and response to disease outbreaks and other events that put human health at risk. Timely identification and management of risks allows a better and more efficient impact.

Under the International Health Regulations (2005; <http://www.who.int/ihr/en/>), WHO member countries must report acute public health events of potential international concern to WHO IHR Regional Contact Points after conducting assessments. These events include not just infectious disease outbreaks, but also other acute public health events caused by food-borne, chemical, and radionuclear agents. In addition, WHO is mandated under the IHR (2005) to conduct event-based surveillance activities which includes seeking verification of rumours and unofficial reports through the IHR National Focal Point, an established national centre designated by member countries for the implementation of the IHR (2005). Unlike routine and indicator-based

surveillance, the WHO event-based surveillance system uses unstructured descriptions and reports rather than routinely collected data and response thresholds. The WHO event-based surveillance system does not directly capture acute public health events identified through routine national surveillance; instead, this information is reported by the countries as appropriate. The public health risks associated with both formal reports and verified unofficial reports are then assessed and a management plan developed and implemented.

The WHO Event Management System (EMS) is a global online system developed by and for WHO employees that allows for all three levels of the WHO (headquarters, country and regional offices) to share real-time critical information on ongoing acute public health events as they are evolving. EMS is a "one-stop shop" for event-based surveillance, risk assessment and operations information. In addition, the information within EMS supports critical decision in the management of acute public health events.

Information on events occurring globally, including an assessment of the risk to public health, is disseminated to the member countries through, the Event Information Site, a secure website accessible to the IHR National Focal Points and intergovernmental organizations including IAEA, OIE and FAO, to allow countries and agencies to prepare and potentially respond in case of cross-border spread of public health threats. As well, information is continuously disseminated to the public through the posting of updates on the WHO website (<http://www.who.int/csr/don/en/index.html>).

Event-based surveillance at OIE

Since its creation in 1924, the World Organization for Animal Health (OIE) has played an active role in sharing disease information among countries and in the prevention and control of animal and zoonotic disease spread. Special attention is paid to the detection and listing of emerging infectious animal diseases. Early warning of emerging animal diseases is essential for prompt precautionary measures to be taken, at national and international levels, to protect both animal and human health .

The OIE disease notification system has two components: 1) an early warning system, providing alert messages for major exceptional epidemiological events, through immediate notification reports, and 2) a monitoring system, providing data on the general animal health situation in countries with regards to OIE-listed diseases, through six-monthly reports. Countries also submit annual reports, which mainly serve to collect information on veterinary human resources, animal population statistics, zoonoses in humans and laboratory and diagnostic tests capabilities.

Active search for non-official information and rumours related to animal and public health has been implemented in 2002. The relevance of this non-official information is evaluated by the OIE's Animal Health Information Department according to the animal health and epidemiology situation of the country or region concerned and, if appropriate, the information is verified by contacting the Delegate for confirmation and potential notification. Furthermore, OIE Reference Laboratories undertake as part of their mandate to inform both the OIE Delegate of the country concerned and the OIE Headquarters of any

positive result indicating the presence of an OIE-listed disease. Information only becomes official once it has been confirmed as being correct by the Delegate. Indeed the OIE considers the information validation process by national Veterinary Authorities to be a precondition for official notification. Furthermore, the use of standardized report forms is vital to ensure the homogeneity of information coming from all over the world and published through WAHID .

Event-based surveillance at FAO

The Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) Global Animal Disease Information System (EMPRES-i) is a specialized Web-based application first publicly released in 2009 to support veterinary services and related organizations by providing access to regional and global disease information to facilitate analysis. Timely and reliable disease information enhances early warning and response to transboundary animal diseases (TADs), including emergent zoonoses, and supports their progressive control and eradication.

Global surveillance of animal diseases is a strategic area of AGAH/EMPRES - Animal Health to support disease intelligence and early warning. EMPRES-i (i being for information, intelligence and intervention) is the FAO's global animal disease information system, compile and collects information on disease outbreaks and

field surveillance implemented at national and regional level and linking with genetic databases on animal pathogens in order to support disease analysis, early warning and providing analyzed information to be used by decision makers at national, regional and global level. EMPRES-i promotes data sharing and inter-operability to integrate data and information for analysis at all levels. Through specific official agreements with key partners, further integration is being developed with databases of other systems, such as the FMD BIOPORTAL at the University of California at Davis, the Swiss Institute of Bioinformatics (SIB) and FAO reference centers on diagnosis, disease surveillance and veterinary epidemiology. Additional plans include integrating agricultural economic data from FAO's statistical database, FAOSTAT, such as trade volumes and price indices into EMPRES.

Communication among the systems = GLEWS

The Tripartite partnership of FAO, WHO, and OIE have been working collaboratively together since 2006. The Tripartite's work together is to identify, assess, and mitigate impacts from existing and emerging threats to health at the human-animal-ecosystems interface where they overlap among the agencies' respective mandates, and where the agencies need to work together in order to effectively address the problem in order to support global health security. In 2010, the tripartite made a Director General-level commitment to jointly address health risks at the animal-human-ecosystem interface, including food safety issues. Important components to this collaboration are surveillance and risk assessment.

It is recognized that information from the human and animal health sectors, as well as from other relevant sectors such as food, wildlife, land use and agriculture is most efficiently and appropriately collected by each sector according to its mandate. Specifically for the human health and animal health sectors, established mechanisms are available to collect and verify important health event information from the field. However the result is that the information often remains within that sector and is not available to other important stakeholders.

Since 2006, the joint FAO, OIE, WHO Global Early Warning System Addressing Health Threats and Emerging Risks at the Human-Animal-Ecosystems Interface (GLEWS; <http://www.glews.net>) has been the agreed tripartite mechanism to share information on health threats. Over the last six years, it has become clear that GLEWS is a powerful mechanism that could be further enhanced by including more systematic, cross-sectoral, iterative risk assessment and risk communication. These additions would significantly strengthen GLEWS' ability to support and direct the management of identified risks. In 2012, in response to better meet the needs of the tripartite and the global community, a revised concept has been developed called GLEWS+ (presented in Parallel Session 4.1 on Stories from the Ground on Friday 1 February 2013 from 15.30 – 17.30). GLEWS+ is informed through the existing global, regional or national surveillance and reporting systems which detect and prioritize health events of international concern.

As mentioned above, GLEWS+ also includes a risk assessment component to allow characterisation of the health threats identified under GLEWS and provide options for management and

communication. The risk assessment outputs would provide agencies and their member states a mechanism to translate information into action in an aligned, collaborative, cross-sectoral way. This allows the tripartite to take advantage of the depth and breadth of technical expertise and experience available throughout the tripartite agencies and their collaborating partners.

Conclusions

Event-based surveillance at the international level is conducted within each sector, and is shared through mechanisms such as the tripartite GLEWS+ in order to allow risk to be assessed and to inform appropriate responses both within each sector and among the sectors in an aligned way. Strong and effective regional and national surveillance systems within each sector are important to be able to collaborate cross-sectorally to address health threats at the human-animal-ecosystems interface. Mechanisms should be in place to effectively communicate important information to other stakeholders who may need it, and to the public, to be able to respond effectively to health threats of regional and global concern.

¹ (Ben Jebara K. & Shimshony A., 2006, International monitoring and surveillance of animal, *Vet Ital.*, 42(4), 431-441)

² Ben Jebara K., Cáceres P., Berlingieri F. & Weber-Vintzel L., 2012, Ten years' work on the World Organisation for Animal Health (OIE) Worldwide Animal Disease Notification System, *Prev Vet Med.*, 1;107 (3-4):149-59

³ Pinto J, Larfaoui, F. Launch of the new EMPRES-i public interface: an integrated tool for global animal disease surveillance, early warning and disease control, *FAO EMPRES Bulletin*. N039.2011. <http://empres-i.fao.org/eipws3g/>, <http://www.fao.org/docrep/015/i2530e/i2530e00.pdf>

⁴ FAO, OIE, and WHO Tripartite Concept Note "Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interface" http://www.who.int/influenza/resources/documents/tripartite_concept_note_hanoi_042011_en.pdf