

# INDONESIA'S RESPONSE TO AVIAN INFLUENZA

(October 7, 2005)

## **A. Assessment of Key Areas of the Country's Overall Preparedness**

### **A.1 Current status of HPAI in Indonesia**

Since the first reported outbreak in Indonesia of Highly Pathogenic Avian Influenza (HPAI) in August 2003, the A/H5N1 virus has spread progressively to, and is now considered endemic in 139 districts in 22 out of 33 provinces on the islands of Java, Sumatra, Kalimantan, Nusa Tenggara, Sulawesi and Bali. As of August 2005, HPAI infection has resulted in more than 10.27 million poultry deaths in the 217 million bird backyard poultry sub-sector. Approximately 9.4 million of these chicken deaths occurred in severe outbreaks between August 2003 and March 2004. For the remaining 9 months of 2004 there were only sporadic outbreaks resulting in the death of an additional 77,000 chickens. However, from January 2005 to April 2005 there was an increased incidence of outbreaks resulting in an additional 778,000 chickens dead. But from May to August 2005 again there were only sporadic outbreaks resulting in about 55,000 chicken deaths.

HPAI is also known to occur asymptotically in wild birds, ducks, quail and pigs, and these species act as 'reservoirs' for the virus, which complicates efforts to eradicate HPAI. In late-September 2005, surveillance of wild birds at the Jakarta zoo revealed 9 of 11 birds tested were infected with H5N1.

The first documented cases in humans were in July 2005. To date there have been 4 confirmed deaths due to HPAI – an additional 2 deaths are suspected to have been due to HPAI but laboratory confirmation is awaited. The source of these infections is not known and investigation is continuing.

Senior officials have been aware since August 2003 of the potential risks to the poultry industry, and are increasingly aware of the potential direct human health risks of HPAI. The risks of potential viral reassortment, the contribution to these risks of some animal husbandry practices, and the related risks of a pandemic are not widely understood. Moreover, other issues (e.g. polio vaccination campaigns, responses to shocks due to oil price increases) are also pressing and HPAI is not yet a priority amongst senior politicians.

### **A.2 National Strategic Plan for Addressing HPAI**

Both the Ministry of Health (MOH) and the Ministry of Agriculture (MOA) are in the process of preparing National Preparedness Plans (NPP). The MOH NPP, prepared with assistance from WHO country and regional offices, is now ready for consultations with other stakeholders and a final plan is expected at the end of September. A first draft of the MOA NPP is expected at the end of September. Although the departments have collaborated on zoonoses before (a good example is rabies for which specific decrees at the ministerial and Director-General level have been issued) there is, as yet, no similar

arrangement in place for HPAI. There has been only limited interaction between the two ministries as their respective plans are prepared.

It is envisaged that an overall National Strategic Plan will be prepared once the sectoral plans are completed. So far the sectoral plans have not been coordinated and there has been no attempt to reach common objectives across the human and animal health activities. Both plans will need to be evaluated as soon as they are released. Both sectors are aware of the importance of communications with the public about measures to take to prevent or reduce the risk of infection, the likelihood of a human pandemic, the most appropriate control measures to delay or avert it and the responses to be made should one occur. So far the public response to the deaths that have occurred has been to temporarily decrease consumption of chicken but overall there is very limited public knowledge of the disease or the best personal protection measures.

### **A.3 Institutional Mechanisms, Including Coordination Mechanisms**

An intersectoral technical team (MOH, MOA) meets monthly and in response to new outbreaks. Recently, a rapid response technical team has been formed with members from MOA-DGLS, MOH, universities, research institutes, and WHO to deal with technical issues related to new outbreaks. However, there are no effective intersectoral coordination mechanisms in place at the top levels of the bureaucracy or government. Whilst a memorandum of understanding between the two ministries on the influenza pandemic is being formulated this will take time; the next step in Indonesia is more explicit engagement of senior politicians to promote and ensure that meaningful intersectoral coordination occurs at the policy level. This is difficult in the current climate where, within health, outbreaks of polio transmission have occurred and required sustained political involvement and across government other pressing issues related to higher oil prices are understandably taking precedence.

### **A.4 Animal Health**

Indonesia's poultry sector comprises four subsectors: 1) Industrial and Integrated producers (high biosecurity); 2) Large-scale commercial producers (medium biosecurity); 3) Small-scale (independent) producers (low biosecurity); and 4) Village/backyard producers. (low biosecurity). Commercial farms account for 80% of the 1.3 billion bird domestic poultry stock while small-scale, backyard producers account for the remaining 20%.

Indonesia has adopted a 9-point strategy for the control of HPAI<sup>1</sup> focused on sub-sectors 3 and 4, which are considered to be the highest risk because of low biosecurity and high-

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<sup>1</sup> 1) Vaccination of poultry in infected and immediately adjacent areas; 2) depopulation (selective culling) with compensation in endemic areas; 3) stamping out in newly infected areas; 4) restocking; 5) surveillance and tracing back; 6) improvement in farm bio-security; 7) control movement of live poultry, poultry products; 8) public awareness; 9) monitoring and evaluation.

risk animal husbandry practices.<sup>2</sup> Sub-sectors 1 and 2 with higher biosecurity currently do not receive assistance from government and are "self-policing".

**Vaccination**. Indonesia has opted for a HPAI control strategy in animals which relies heavily on mass vaccinations of poultry in infected and immediately surrounding areas, with limited culling and biosecurity measures. There are 6 imported and 2 local vaccines which are approved and registered by MOA for use in Indonesia. The currently available vaccines require multiple (three or four) doses to be administered at different life cycle stages. The vaccinations are administered by 3000 vaccinators whose salary and operating costs are financed by the MOA but who are based at district offices. The proper administration of vaccines is difficult to control, particularly in the backyard sub-sector among free-range stocks and the efficacy is uncertain. Vaccines used in the Industrial and Large-Scale Commercial subsectors are more likely to be administered properly. However, MOA has no legal basis to require mandatory reporting from these sub-sectors. Voluntary reports are received from producers in these sub-sectors, but these are not systematic. The rationale for vaccination is that it helps to reduce both disease incidence in chickens as well as virus circulation in the environment which reduces the risks of reassortment. Nonetheless, there are concerns that a heavy reliance on vaccines over the long-term could lead to the virus becoming endemic in vaccinated poultry populations and may lead to changes in the virus. Therefore an exit strategy is needed but is not yet in place.

**Surveillance**. The surveillance program is intended to serve several key objectives, including early detection of infection in chickens and other species (such as wild birds and pigs), definition of zones (infected, susceptible, free) and (virus free) compartments, and sub-typing. The surveillance is conducted by the 7 Regional Disease Investigation Centers (DIC) in cooperation with Provincial and District Livestock Services. The main focus of the surveillance system is on post-vaccination monitoring, but also includes virological monitoring and clinical monitoring. For post-vaccination monitoring, blood samples are collected from vaccinated chickens in known infected and suspected areas, and are tested for antibodies (to establish resistance) in the DIC's lab and at the National Animal Research Institute (NARI). The sample size for the monitoring is relatively small and should be expanded, and the sampling methodology and implementation should be strengthened.

**Depopulation**. Limited culling is undertaken following outbreaks in endemic areas. More extensive culling is intended following outbreaks in newly infected areas. However, the amount of culling has been inadequate and seems to be dictated more by available budget than by standards of good practice (see section B below).

## **A.5 Human Health**

**Surveillance**. Disease surveillance for humans occurs through both routine and additional surveillance activities. The routine surveillance system is based on reports

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<sup>2</sup> High-risk farming practice include free-range chicken production and integrated livestock systems which mix poultry with other livestock, including pigs.

from the more than 7000 health centers and 415 hospitals across the country. Information on 15 important health conditions (communicable and non-communicable) are collected weekly and monthly on 29 communicable diseases, including influenza. In the wake of decentralization less than 30% of health centers report regularly, while those from hospitals are more regular and complete. Additional surveillance activities which aim to serve as an early warning system are carried out in 21 'sentinel' hospitals with the assistance of US Navy Army Medical Research Unit (NAMRU-2). Information from the routine surveillance system is incomplete and not always timely, problems that plague the whole disease surveillance system; in contrast, that from the sentinel sites, while more limited in scope, is of good quality and available electronically.

**Control Measures.** MOH is implementing control measures that aim to control human-to-human transmission as well as prepare services for treatment and care of HPAI patients. Preparation of health staff has intensified since the country's first outbreak in humans. The forty-four designated HPAI reference hospitals (which builds on the capacity created during the SARS outbreaks in SE Asia) are stockpiling what are so far only limited amounts of Oseltamivir and personal protection equipment. In-service training for clinical staff in the designated hospitals on diagnosis and treatment of HPAI has been carried out and details on diagnosis and treatment algorithms disseminated to health centers. A media campaign on the nature and control of HPAI using posters, leaflets and other media has commenced. Seminars on HPAI surveillance have been held and a rapid response team set up in conjunction with MOA.

Plans for the immediate future include continuation of surveillance activities and related training of health center, district hospital and district health office staff; procurement of equipment drugs and diagnostic kits; and dissemination of information to a wide range of health personnel including doctors at the puskesmas and district hospitals. The most important constraints to the control response at the moment relate to the limited collaboration between MOH and MOA in surveillance, the lack of a BSL3 lab and frequent shortages of laboratory reagents (including viral transport media) at critical laboratories limiting overall diagnostic capacity.

## **B. Assessment of Effectiveness of Activities to Date**

Indonesia has made a good start in addressing HPAI. To date MOA has had the heaviest workload, setting up surveillance of, and implementing control strategies for, the animal population. After a slow initial response and over-reliance on vaccination of poultry for its control strategy, and following the first several confirmed human deaths and an increase in suspected human infections, MOA recently announced that it will begin to employ a stronger focus on culling. If implemented, this would be a positive step.

MOH has also been very involved in preparing for a possible outbreak in the human population and in investigating those deaths that have occurred. Technical assistance has been very important in strengthening these responses and in making plans for future activities. MOH has received strong support from WHO and from several bilateral donors and, as a result, is further advanced with plans than MOA which has received limited and

sporadic support from FAO/OIE. Further in-country technical support is important for both ministries, especially MOA if it is to control the HPAI virus at source and reduce the risks of human infection and reassortment.

Moreover, the response to date has been ineffective in controlling the spread of the virus, and needs to be strengthened through the following additional steps:

- **Reach agreement on a common objective across sectors** – this will allow each ministry and group to clearly identify what is required of them to meet the common goal. So far there is no agreement on this common goal and the overall effort has suffered as a result.
- **Reach agreement on integrated HPAI control strategy, strengthen coordination at working level, complete preparedness plans, prepare detailed action plans, scenario based costing of action plans.** Once the plans for each ministry are drafted it then becomes critical that the points at which cooperation and joint action are required are identified and the mechanisms for ensuring that it happens put in place. Surveillance is one key area where close cooperation needed. For example, when animal surveillance identifies an area of infection, human surveillance needs to follow up in the same area.
- **Establish coordination mechanisms across ministries which involve senior bureaucrats and politicians.** These mechanisms need to go beyond the current, largely informal, cooperation which occurs now to active, results oriented coordination by senior government officials and politicians. For example, a senior politician and/or a senior bureaucrat should be given responsibility for implementation of the overall control strategy, identifying where coordination between ministries was necessary and ensuring that it happened.
- **Cost sharing between national, provincial, and district governments for HPAI surveillance and control is also a serious consideration.** In 2005, the costs of the control program including vaccination of poultry were largely borne by the national government. However, it is envisaged that in 2006 and beyond provincial and district governments will shoulder a larger share of the responsibility and costs. However, there are risks that such decentralization of responsibility for HPAI surveillance and control may undermine further the efficacy of the strategy. Given the obvious public good aspects at risk, this should be reconsidered.
- **Strengthen laboratory capacity for surveillance and diagnosis in both animal and human populations.**

Within the animal health strategy specifically, there are several key implementation issues that need to be addressed:

- **Phase out high-risk farming system practices.** The FAO/OIE Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza recognizes that restructuring of the poultry sector is an important part of a strategy to control HPAI at the source. While the 9-point strategy for control of HPAI currently employed by MoA is based on the FAO/OIE Global Strategy, it does not address the significant risks for continued viral circulation and possible reassortment related to some

backyard farming system practices, especially free-range chicken production, and integrated livestock systems which mix poultry with other livestock, including pigs. Indeed, despite the risk they pose, integrated livestock systems are actively promoted by the MoA, as well as donors and international research institutions including the CGIAR. Given that long-term use of vaccines is not recommended, poultry sector restructuring should be included as a medium-term objective of the HPAI control strategy.

- **Include commercial poultry sub-sectors in the HPAI control strategy.** Currently the commercial poultry sub-sector is outside the regulatory jurisdiction of the MoA. While the higher-end integrated producers operate biosecure production systems, these are not fool-proof and are susceptible to biosecurity breaches and infection. Also, smaller-scale commercial producers operate facilities with more limited biosecurity, and are even more vulnerable to infection. The lack of compulsory surveillance and reporting on HPAI from the commercial poultry sub-sector, representing 80% of the domestic poultry flock, makes it impossible for the MoA to have a total picture of HPAI status in the country.
- **Improve monitoring and evaluation of the effectiveness and feasibility of mass vaccination in the backyard poultry sector.** Implementation of a mass vaccination strategy in the backyard poultry sector is very difficult given the prevalence of free-range poultry production in the farming systems, particularly with the multi-dose vaccines currently in use. These difficulties are further complicated in Indonesia by decentralization, which requires the active engagement and cooperation of provincial and district level government. The efficacy of the vaccination strategy is unproven and needs to be better assessed through more systematic vaccine testing and strengthened post-vaccination monitoring.
- **Increase use of culling.** Given the high likelihood of problems in implementation of the vaccination strategy in the backyard poultry sector, it needs to be coupled with more extensive culling than is currently undertaken when outbreaks occur. However, budget issues seem to be a key constraint. The overall budget for culling is far too limited. Moreover, compensation rates set by MOF are very low, which undermines farmer cooperation in culling. The current unit rate is Rp 2,000 per bird (about \$0.20) with a cap of Rp 20 million (about \$2000) or 10,000 birds per farmer, whereas the cost of a one-day-old-chick is about Rp 5,000.

Several **bilateral and multilateral donors** and agencies are keen to support the HPAI control effort. However, it is important that donors keep in mind that there is often a perception that donor interest in control of HPAI in Indonesia is only related to preventing spread of the virus to high income countries in Europe, North America and Australasia. This view is strengthened by the clear emphasis from many donors on activities in the health sector and what many see as the easy options such as treatment and human disease surveillance. Complementing this view is the feeling that the remedies proposed for agriculture (culling, vaccination, stamping out) are expensive and unproven. The lessons for the donors here are twofold:

- **Promote the need for Indonesia to reach agreement on a common objective for its HPAI control activities** so that all activities can be seen as contributing towards it. This will then allow Indonesia to more easily identify gaps in its own activities and the areas in which donor assistance would be most useful.
- **Conduct the dialogue with Indonesia on HPAI within the context of this agreed objective** so that assistance provides support for the Indonesian control program with the objective of improving the health status of Indonesians as well as the population of the donor country.

### **C. Inventory of Development Partner Activities**

Technical support is being provided in several different ways. **WHO** provides direct, in-country support on disease surveillance generally, and HPAI surveillance and preparedness specifically. **FAO** provides general support from the regional office in Bangkok and periodic expert advice; there is no in-country technical expertise related to HPAI; **ASEAN** is organizing a ministerial meeting of member states in October to discuss lessons learned from experience in Vietnam, Thailand, Malaysia and Indonesia and provides technical assistance to member states. Amongst the bilaterals: **Australia** is providing direct technical support through WHO Indonesia, some district level support for animal control measures through ACIAR, high level consultations on coordination of activities between the two countries, and additional support at the regional level; **United States** assistance concentrates on preparedness for a possible human epidemic through surveillance (NAMRU-2), additional activities are being planned following the visit of a high level technical team from various agencies of the US government visiting Indonesia in mid-September and further high level visits in October; a team from **Canada** will hold a workshop in Indonesia in mid-September to plan support to the national public health system with emphasis on emerging infectious diseases including HPAI and further meetings and activities are planned; the **Netherlands** plans, in collaboration with MOA, a four-region pilot study of the effectiveness of vaccination of poultry as a control strategy.

### **D. Resource Implications of Getting Prepared**

Although the GOI and some donors are now committing significant resources to the surveillance and control effort and to preparing for a possible epidemic in humans, it is clear that the strengthening the current effort will require significant additional resources over the medium term as surveillance is maintained and the epidemic in the avian population controlled and reduced in extent. If human cases occur in significant numbers there will be a vast increase in resource requirement as surveillance is enhanced and control measures, including isolation and treatment, put in place. Further, costs due to maintaining law and order in an epidemic and controlling the movement of people will also require additional resources. It is not possible to estimate these costs at the moment as the MOA and MOH plans are not available in sufficient detail; once they are initial estimates could be made for a range of scenarios.

## **E. Regional and Public Goods Concerns**

Addressing a number of global public goods questions would be of value to countries as they set objectives and design their programs. Examples of the questions that need to be addressed here are:

- Identification of realistic objectives in a country depending on their HPAI status. Thus, what are realistic objectives in a country in which HPAI is already widely endemic compared to a country in which the virus is not yet endemic?
- Further refinement of models of the human epidemic to permit better assessment of the effectiveness of possible interventions.
- Development of similar models for animal populations in various settings to address issues related to the best way to quickly control focal outbreaks in the poultry population in various settings (e.g. large scale commercial production, medium scale commercial production, village setting) what are the best ways of quickly controlling the epidemic?
- Assessment of the relative role of various control measures (vaccination, culling, stamping out) in different poultry industry settings.
- Development of better poultry vaccines (i.e. one dose versus the current four-dose vaccines)
- Assessment of the role of pigs in the transmission and transformation of the virus and identification and assessment of the control measures aimed at the porcine population.