Regional Representation
For the Middle East

Avian Influenza in the Middle East: Preparedness and Control
Role of wild birds and birds of prey
OIE Regional Representation for the Middle East
Kuwait City
20 – 22 April 2008

Report

Objective:

The three-day meeting was organised by the OIE Regional Representation for the Middle East in collaboration with the Public Authority of Agriculture Affaires and Fish Resources of Kuwait (PAAF).
The specific objectives of this Meeting were:

- Increase knowledge about avian influenza infections in wild birds, wild birds of prey and captive falcons;
- Increase awareness on the risk of Notifiable Avian Influenza spread through uncontrolled movement of birds (smuggling, hunting…);
- Recommend an efficient strategy to secure the trade of birds into Middle Eastern countries.

10 countries attended this meeting: Bahrain, Jordan, KSA, Kuwait, Lebanon, Oman, Qatar, Sudan, Syria and UAE.

1. Opening ceremony

The inauguration ceremony was held in the conference room of the Public Authority for Agricultural Affairs and Fish Resources (PAAF) of Kuwait building.

The workshop was inaugurated by Eng Jassem Habib Al Badr, Chairman and Director General of the PAAF. He welcomed all the participants of the workshop and expressed that it was the pleasure of Kuwait to host such meeting. He noted that Kuwait experienced influenza outbreaks in 2007 and contained it thanks to the efforts and efficiency of its staff in collaboration with the international organisations. Nevertheless the threat is still present and he advocated maintaining a high level of vigilance. For this reason, Kuwait wished to host this workshop with special focus on falcons, which are highly considered in the country.
He announced that a new laboratory facility will open in few weeks with a large part for animal disease diagnostics and that it will also manage a centre for early warning for Goff Council Countries.
He explained that Kuwait has applied for the OIE procedure for evaluation of Veterinary Services which will help Kuwait to improve the quality of its services in compliance with international standards.
Finally, he expressed Kuwait's thanks to the OIE Regional Representation for the Middle East for the support offered to his country and for its work to improve animal health in the region.

Eng. Nabeela Ali Al Khaleel, Deputy Director General of Animal Resources (PAAF) welcomed all the participants and thanked the OIE Regional Representation for proposing that the state of Kuwait should hold such an important meeting. She was reminded of the losses caused in 2007 by the HPAI H5N1, with 20 infected establishments; more than 2 million layers, half a million breeders and 250 ostriches were culled and 10 000 eggs and 280 ostriches hatching eggs destroyed. Efforts have to be maintained to anticipate further occurrences of the disease.
She wished to all participants a very good stay in Kuwait and a very profitable workshop.

Dr Ghazi Yehia, OIE Regional Representative for the Middle East, thanked the Kuwait authority for the extraordinary hospitality and cooperation in the organisation of such important workshop for the region. He reminded that tackling transboundary diseases like avian influenza require a global approach.
He insisted on the importance of vigilance, notably on falcons, which could be a hidden source of the virus. He advocated strengthening movement controls notably at borders and informed that the OIE Regional Representation will present a model of sanitary certificate which could be used for the transport and trade of falcons. Finally, he wished full success for this workshop.

2. Current avian influenza (AI) situation worldwide and the OIE standards – Dr Hamilton, OIE

Dr Hamilton summarised the current global highly pathogenic avian influenza (HPAI) situation based on official reports to the OIE. He explained that the rapid wide spread occurrence of the current HPAI H5N1 Asian strain over 3 continents – affecting a total of 61 countries since 2003 – was unprecedented.

He described the pattern of the reported outbreaks in 2006 and 2007. Many countries had been able to control the disease, some had experienced reoccurrences and in a small number the disease had become entrenched.

He highlighted that there was a greater chance of successful control when veterinary services were strong and when disease was detected early. OIE works to encourage strengthening of national veterinary services. This is a global public good since an outbreak of a transboundary animal disease in one country can be a threat to the whole international community.

Dr Hamilton explained the role of the OIE and introduced the OIE Standards, officially recognised by the WTO SPS agreement. He highlighted some specific points about avian influenza that are found in the OIE Terrestrial Animal Health Code and Manual of Diagnostic Test and Vaccines, stressing on the definition of Notifiable Avian Influenza and the Code definition of Poultry.

During the discussion, Dr Hamilton highlighted that sharing biological material and information contributes to the global avian influenza control effort and is a global public good. A principal goal of the OIE-FAO OFFLU network of expertise on avian influenza is to exchange scientific data and biological materials (including virus strains) within the network, and to share such information with the wider scientific community. Collaboration between the animal and human health laboratory networks is also vital for issues relating to public health, such as the early preparation of human influenza vaccines.
He clarified that country freedom from avian influenza is based on self declaration. Countries should base their claims of disease freedom on evidence provided by effective surveillance; guidance on this is provided in the relevant chapters of the OIE Terrestrial Animal Health Code.

3. The updated situation of avian influenza in the Middle East – Dr Yehia, OIE – ME

Dr Yehia presented firstly the situation in ME countries since the last 6 months. Country by country he exposed, according to country official report through WAHIS, summaries of each specific situation as proposed by the OIE WAHID (World Animal Health Information Database).
He explained also that, in some Middle East countries, falcons have also been affected by the virus and incriminated as a possible source of introduction or transmission of the disease:

- KSA reported cases in 2005 – 37 falcons culled in Riyadh hospital;
- Kuwait in February 2007 reported first case in falcons before HPAI occurred in poultry (20 outbreaks);
- A Saker Falco imported in November 2007 in KSA from Central Asia was tested positive and died (tested performed in UAE). KSA then reported HPAI in poultry.

Falcon's smuggling and uncontrolled trade from Asia, where H5N1 is regularly reported, could be an important risk of introduction of the virus.
Then Dr Yehia precised that other avian influenza viruses, notably the H9N2 low pathogenic strain, are present in ME countries causing economic losses and should be taken into account for the implementation of vaccination procedures.
Dr Yehia stressed that a regional strategy is needed as recommended by the 9th Conference of the OIE Regional Commission.
The aim of this project is to:

- Evaluating the current situation of H5N1 in the Middle East and the state of preparedness in ME member countries;
- Providing information on management and surveillance, including wild birds monitoring and lab diagnostic;
- Discussing the vaccination strategy;
- Presenting a general framework for establishing a regional strategy, tailored-made to the conditions prevailing in the Middle Eastern Countries;
- Developing the concept of modelisation for national management.

3 stages would compose this project:

- the first one: the review of the actual preparedness situation of regional countries, during the present meeting;
- then in country expert mission to assess the need of countries;
- at last, in Cairo, October 2008, a regional Ministerial forum for evaluation of national contingency plans by experts reports and to develop specific contingency and of pre-security plans for regional countries.

The discussion was focused on vaccination, and Dr Yehia stressed to respect the recommendation of the OIE/FAO Conference on AI vaccination held in Verona in March 2007.

4. Kuwait Preparedness Presentations

4.1. Biosecurity in Kuwait Zoo, Dr Mostafa Mahmoud

After a general overview of the Kuwait zoo, Dr Mahmoud explained that avian influenza H5N1 occurred in falcons inhabiting a netted aviary in February 2007. He stressed that the standard measures used to prevent and eradicate HPAI virus outbreak in poultry would not be applicable considering the irreplaceable, valuable or endangered species in the zoo.
So, to curtail Avian Influenza outbreak in the zoo, a combination of increased Biosecurity measures, selective culling for non endangered or high value species (pigeons, chicken…), extensive surveillance (random samples: caecal, oropharingeal, blood) and vaccination were used.
Then Dr Mahmoud described all the measures implemented to enhance Biosecurity measures: denied access to visitors for 6 months, limited access for vehicle (emergency situation) with strict disinfection, definition of aviaries epidemiological units with specific workers, protection and improve hygiene for workers, secured disposal, translocation of roaming species, protection of open pond covered with double layer of light plastic sheet.
Then vaccination was considered as an optional measure.

4.2. Vaccination of Kuwait Zoo birds against A.I., Mrs Farida Molla

When HPAI H5N1 occurred in February 2007, Ms Molla explained that avian influenza vaccination in the Kuwait zoo was taken as an additional protective measure to Biosecurity and limited to high value birds. The priority for vaccination was based on the conservation value of the species.
Then, she described the protocol used for the vaccination: identification of birds, blood samples collection before vaccination (10 % of concerned birds), vaccination (Intervet Nobilis H5N2) inoculated subcutaneously with a dose based on body weight, repeated 6 weeks after, blood samples 4 and 8 weeks after vaccination. Sentinel birds have been used.
A total of 37 species (13 Families) were vaccinated.
She presented also results of the serological monitoring, concluding that the vaccination has produced protective antibodies titre.

4.3. AI surveillance in Kuwait, Dr Zelalem Tadaesse

Dr Tadaesse made an overview of the bird population situation in Kuwait, distinguishing each production system.
He described also the passive surveillance strategy applied in Kuwait, emphasised awareness campaign, case definition and the emerging calling centre activated by the Kuwait official Authorities.

Then he described the active surveillance developed in the country where 300 flocks were inspected and sampled every 2-3 months (swab and blood samples) and a targeted surveillance is applied in live birds market.
In addition, he detailed control measures to be applied in case of HPAI outbreak, in compliance with international recommendations.
He reported that according to chapter 2.7.12.3 of the OIE Terrestrial Code, Kuwait recovered its HPAI freedom the 20 July 2007.
He explained that preparedness plan is regularly updated and level of control increase since the occurrence of outbreaks in November 2007 in KSA.
He gave also details on actual vaccination programs on breeder and layer farms (DIVA strategy and sentinel birds).
At last, he informed that an AI national technical committee meets every week to discuss on findings of surveillance activities and other related issues

4.4. AI Lab Diagnosis, Dr Attia Samy

Firstly Dr Samy described clinical symptoms observed in infected falcons and poultries in Kuwait during HPAI H5N1 outbreaks in February 2007.
He presented the sampling procedures used and described all the results obtained, confirmed by OIE Reference Labs of VLA and Verona, highlighting that virus genetic sequences isolated from falcons and poultries are the same.
He detailed also all techniques used in the official lab (rapid kits, ELISA, RT-PCR, AH test).

4.5. General discussion on Kuwait's presentations

Questioned on the fact that in the recent outbreaks in Middle East, only falcons have been infected and not other birds of prey, Dr Mahmoud explained that the source of feed could be a factor of infection: falcons are fed with quails than eagles and vultures with meat.
He precised also that the Kuwait zoo received 4 falcons before the outbreak. They were quarantined (30 days) with negative samples, but 1 week after their grouping with other falcons, they died.
A total of 7 falcons died in the zoo.

Discussion was focused then on the quality of swab and Dr Ruth Manvell (VLA) specified that plastic or metal shafted ones are recommended

5. National avian influenza contingency plans

Lebanon, Oman, Qatar, Syria, Sudan and UAE exposed their national contingency plans.
Only Sudan experienced outbreaks.
Lebanon focused its presentation on specific wild bird's consideration relating to AI risks.
Each country has implemented national contingency plans in accordance on international standards and recommendations, which are regularly updated and complied with specificities of each country.
The use of incineration in Qatar to destroy infected carcasses and materials, adapted to specific environnemental conditions (water table) was largely discussed and reflected well the necessity to adapt contingency plans to national specificities.
Differences appeared on the state of preparation linked with financial resources of countries. Countries which needed external resources (Syria, Sudan and Lebanon) have not yet established emergency funds, neither organise simulation exercises…

Qatar has developed ambulatory clinic (2 well equipped trucks) and applies for OIE Lab Twinning procedures for Avian Influenza.
Import procedures are applied in all countries but not always on a strict compliance with the OIE Standards.
The Veterinary Services of Qatar have not the regulation in place to control imported animal food from animal origin.

6. Current evidence on the role of wild birds in the epidemiology of highly pathogenic avian influenza H5N1 Asian Lineage – Dr Ruth Cromie, WWT

Dr Cromie summarized the spread of H5N1 outbreaks since 2003 and detailed human and animal cases. She explained that several modes of spread have been involved in this epidemic: wild birds, modes of transport, poultry, pet and wild bird trade (legal and illegal), fomites and people.
She precised that a good understanding of each possible route is needed to provide a good evidence base for good risk assessments.
Then she defined the "wild bird" term and described wild species affected by H5N1 since 2003.
For her, some events indicated that that wild birds could be involved in the maintenance and spread of the virus like the birds in lakes in Mongolia dying after the large outbreak in Lake Qinghai in China in may June 2005, suggesting that surviving birds had carried infection north, or the infection in wild birds across Europe in late 2005 – early 2006 where H5N1 was detected in more than 700 wild birds in 13 countries, but only four countries experienced outbreaks in domestic poultry, or wild bird cases in mainland Europe in summer 2007 and UK incursion in January 2008.
In the other hand, factors suggesting that wild birds are not involved to any great extent in spread of infection include the extremely low prevalence of H5N1 in wild birds as indicated by worldwide surveillance since 2005, or the timing of outbreaks in poultry and wild birds does not coincide with migration, or poultry movements often being more plausible explanations in outbreaks occurrence, or the relatively limited geographical distribution of outbreaks in comparison with migratory bird flyways which overlap and cover all continents including the Americas.
Next she presented lessons learned since 2003 concerning the disease maintenance, the spread and transmission of the virus, underlining notably that domestic ducks could play an interface role in such transmission.
She exposed that there is actually no clear understanding of exact role wild birds play in spread of disease but they likely play some role and she highlighted also that better information is needed.
She regretted wild birds cases reported to the OIE are often lacking the most basic of information such as species involved hence preventing the development of a good understanding of the epidemiology of the disease in wild birds. Indeed the current OIE reporting system does not help distinguish between domestic/captive birds or wild bird cases (appreciating that the system is for all notifiable animal diseases). She encouraged additional reporting to the Global Avian Influenza Network for Surveillance (GAINS).

During the discussion, when there was a suggestion for an alternative reporting mechanism for wild bird findings Dr Keith Hamilton (OIE) said this could create confusion,. He reminded that notification to OIE is the official notification system. OIE provides guidelines and Member Countries and Territories undertake to report OIE listed diseases to OIE when they have been detected. Findings of HPAI in wild birds are notifiable to the OIE. When reporting such findings, and where possible, details of the species of wild bird (including Latin name) should be included.

Then the discussion was focused on wild bird surveillance, recommendations were made to use antigen detection in this case, further information was given on key geographical areas for

surveillance, which are high concentration of birds, notably water birds, and where surveillance is poor.
Dr Cromie precised also that quota on falcons importation are not a sanitary issue, if falcons are healthy and fed on uninfected food they posed no threat of contamination. She commented that the main threats from falconry in terms of spread of H5N1 come from associated practices of moving prey species and falcon food (both legal and illegal) and further work is required to quantify and qualify these risks.

7. Results of wildlife surveillance for avian influenza viruses in wild birds (Egypt Experience) – Dr Carlos De Mattos, NAMRU3 – Egypt

Dr De Mattos described the HPAI H5N1 surveillance in migratory birds in Egypt, which is a collaborative project between the Ministry of Environment and NAMRU3 (official Egyptian laboratory).
He reminded the occurrence of H5N1 in Egypt detailing human and animal cases.
Then he exposed the migratory bird surveillance program in Egypt, conducted seasonally from September to April since 2003.
He exposed that both cloacal and oropharyngeal samples are collected and diagnosed by PCR (A virus matrix gene). Positives are screened for H5 and then for N1.
He described species most frequently sampled and exposed that only 2 cases of H5N1 have been reported in December 2005 and February 2006 and that the virus is closely related to virus in human and poultry.
H5N1 was detected in wild birds before the first report of this virus in human and poultry.
He explained also that since February 2006 HPAI H5N1 was no more detected in migratory birds.

Questions were focused on the persistence of H5N1 in Egypt. Unfortunately no representative of Egyptian Veterinary Services attended this workshop. Prof. Aidaros (FAO) informed only that the absence of compensation for backyards stamping out put a brake on control strategy.

8. The potential role of birds of prey and hunting falcons in the epidemiology of avian influenza. Current evidence and implications for the Middle Eastern region – Dr Ruth Manvell, VLA

After a quick overview of influenza viruses, Dr Manvell explained that raptors are confirmed to be susceptible to influenza viruses of more than one subtype.
She underlined the importance to get the correct diagnosis confirmed by laboratory tests because a lot of other diseases have the same clinical signs.
She revealed after the European surveillance on birds of prey in 2007. 2696 birds of prey were sampled and only two common buzzards tested positive for H5N1.
She described then recent HPAI reported cases in birds of prey worldwide.
She highlighted the HPAI susceptibility of different species of raptors and that the way infected feed could be an important risk factor for contamination (tissues tearing out with beak).
So, raptors could be a source of virus introduction after hunting and return in their aviary. Illegal trade could be an at risk route of introduction and Dr Manvell described a case of 2 eagles imported illegally in Belgium from Thailand and infected with H5N1.
She insisted on biosecurity measures that should be adopted in falconry and underlined the necessity to adopt strict quarantine measures for all imported new birds, including wild caught raptors, and to isolate birds exposed to infection on hunting trips or gatherings away from resident stock.

She explained also that birds of prey have been subjected to vaccination with no apparent ill effects but underlined that even though a bird may be protected from clinical signs it may still excrete live virus capable of infecting susceptible birds.
Lastly, she expressed that wild birds of prey have never been demonstrated as being involved in the dissemination of HPAI viruses but are most likely dead-end (top of pyramid) hosts in the epidemiology of HPAI, eating infected carcases, but that illegal movements of birds of prey represent a significant threat for the introduction of HPAI. Biosecurity measures should be enhanced as high as possible.

The discussion was mainly focused on quarantine. Dr Manvell revealed that in UK birds are sampled before their introduction in the country and before their release from the quarantine facility. Two different location for swabbing are recommended (orophanryngeal and cloacal) and sentinel birds could be used during the birds isolation.
The isolation should at least respect the minimum recognised incubation period for HPAI for trade purposes (21 days).
She confirmed also that information to date indicated that feeding of infected food stuff is a main source of infection for birds of prey.

9. Measures to control avian influenza in domestic birds – Dr Hamilton, OIE

To avoid duplicating the other presentations Dr Hamilton explained that he would not go into detail about control measures but would instead give an overview of the approach, trends and lessons that have been learned.
From the outset it had been widely agreed that to reduce the impacts of avian influenza outbreaks and guard against the risks to public health, avian influenza needs to be controlled at the poultry source. Early detection followed by prompt reporting provides early warning to the international community so that precautions can be taken to reduce the risk of further spread (containment whilst controlling the outbreak(s)).
Suspect cases of notifiable avian influenza should be investigated immediately to confirm or rule out the presence of disease; this requires a good reporting network and an awareness of disease signs. It is important to have an effective compensation mechanism to encourage reporting. Access to accurate and reliable laboratory testing is necessary for confirmation of Notifiable Avian Influenza.

He emphasised that early detection and a rapid response are important so that measures can be implemented when disease is most amenable to control and therefore reduce direct losses. To achieve this it is necessary to have strong public and private components of the veterinary services. Delays in detection and response can lead to significant increases in the cost of controlling the disease.

There is a need to improve veterinary services in developing countries, and the evaluation of veterinary services by the OIE PVS tool provides a way of identifying gaps so that improvements can be made in the right areas, leading to maximum overall benefits.

Control policies should be based on scientific principles. Valuable lessons have been learned since 2003 and these should inform current and future policies.

There remain some gaps in our understanding of the disease and there is some room for further research to improve control methods. For example; in developing vaccines against avian influenza that can be more easily delivered to large numbers of birds; developing heat stable vaccines and

developing improved diagnostic tests (cheaper, accurate and more rapid). As diseases evolve the ways we prevent and control them need to evolve also.

Before discussion, Dr Yehia informed that most of Middle Eastern countries have applied to a PVS evaluation, and the two last countries will do it very soon.

The discussion included the 'self declared disease freedom status' applied to Notifiable Avian Influenza. Dr Hamilton explained that official OIE recognition of disease free status – as applied to FMD, Rinderpest, BSE and CBPP - is not applicable for a disease like avian influenza, considering its epidemiology including the possibility of its occurrence in wild birds and the difficulties in detecting notifiable low pathogenic avian influenza infection.

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OIE has developed guidelines (Chapter 3.8.9) for the avian influenza surveillance to assist countries in developing an effective surveillance strategy.

10. Vaccination as a complementary tool to control avian influenza – Dr Hamilton, OIE

Dr Hamilton invited participants to consult OIE and FAO literature on avian influenza vaccination (available on the OIE and FAO website):

- Chapter 2.7.12 of the Terrestrial Code;
- Chapter I.1.7: Principles of Vet. Vaccine Production and Chapter 2.1.14: Highly Pathogenic Avian Influenza of the OIE Terrestrial Manual.
- In Collaboration with FAO*:*
  - information document on avian influenza vaccination (March 2006);
  - guidelines on vaccination against HPAI (May 2007).

He explained that successful vaccination relies on eliciting a good immune response and this requires delivery of pure, potent, vaccine that is antigenically matched to circulating field strains of virus; it is vital that the cold chain must be maintained. It would be a waste of resources to implement a vaccination programme if the cold chain was not maintained throughout the entire process.

He underlined that vaccination is a complementary measure to other classic control measures such as biosecurity, movement controls and stamping out and that vaccination must not lead to complacency about biosecurity

Before deciding to vaccinate, countries should conduct an analysis and consider vaccination in context of the whole strategy; this should include an exit strategy. In collaboration with FAO, OIE have produced some useful guidelines on the implementation of vaccination strategies.

Dr Hamilton listed some of the factors that should be considered in leading up to the decision on whether or not to vaccinate and factors that should be considered when formulating the strategy.

Post vaccination monitoring is essential to assess the effectiveness of vaccination, to check that infection is not circulating in vaccinated birds and to ensure that vaccine strains are adequately matched to circulating field virus. It is important that there is sufficient laboratory capacity to support post vaccination monitoring.

Recent research findings have indicated that vaccination with inactivated H5N2 vaccine may protect some falcons against disease and reduce viral shedding in these birds when challenged with HPAI H5N1. However there is only limited data on this in a small number of birds under

experimental conditions and there may well be a difference in response to vaccination between different species of falcons. It is known that different species of zoo birds have a variable response to vaccination.

Whilst vaccination may play a role in protecting valuable birds and may reduce the risks to handlers, the primary measures for prevention and control in falcons should be good disease surveillance and biosecurity. This should include ensuring that falcons are fed meat that could not have been contaminated or infected with avian influenza virus. Good biosecurity should be practiced at gatherings such as markets, falconry events and in collections. Measures should be implemented to reduce the risk of introduction through import of captive or captured birds. If birds are vaccinated this must be followed up with good post vaccination monitoring to assess whether infection is present. Vaccination should also account for national legislation and licensing information of the product.

The discussion was focused on implementation and monitoring of vaccination programmes and Dr Hamilton emphasized the OIE and FAO guidelines and recommendations on vaccination.

11. Harmonisation of sanitary requirements on movement control of domestic birds – Dr Primot, OIE-ME

Firstly Dr Primot exposed countries general obligations (Chapter 1.2.1 of the OIE Terrestrial Code) related to international trade, for both importing and exporting countries.
He clarified for the purpose of the trade the official definition of (Chapter 2.7.12):

- Notifiable Avian Influenza and Poultry: For the purposes of international trade, avian influenza in its notifiable form (NAI) is defined as an infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any AI virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality). NAI can be divided into highly pathogenic notifiable avian influenza (HPNAI) and low pathogenicity notifiable avian influenza (LPNAI);
- Poultry is defined as all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose.

Then, he exposed the specific conditions relevant to the trade of live birds other than poultry as defined in the article 2.7.12.6 of the OIE Terrestrial Code.
He presented at last a model of sanitary certificate for the trade of domestic birds including all OIE recommendations, not only for avian influenza. The model is available on the website of the Regional Representation (www.rr-middleeast.oie.int – Regional trade).

12. Forum for discussion

3 main subjects were tackled: surveillance and control, vaccination and importation, summarized below:

12.1. Surveillance and control

- Most countries expressed their need of training on surveillance, notably on wild birds, and of strengthening their capacities;
- Stamping out is not applicable for wild birds;
- Biosecurity in poultry should be enhancing in case of infection in wild birds;
- Compensation for falcons is a difficult issue considering the high value of those birds.

12.2. Vaccination

- Sharing virus strains is very important worldwide and should be reinforced;
- According to the recommendation of the OIE – FAO Verona conference on vaccination (march 2007), countries could consider vaccination to protect valuable birds;
- Prevention and control in falcons should focus on biosecurity and surveillance. Vaccination may have a role in protecting valuable birds if they are at increased risk of infection. If vaccination is practised some countries might have restrictions on the import of vaccinated birds.
- It may be more difficult to detect infection through clinical surveillance in infected vaccinated birds.

12.3. Importation

- OIE recommendations should be respected for the importation of all susceptible products;
- To facilitate management of birds during post entry quarantine isolation, falcons flocks or falcons which hunt in the same places should be considered as the same epidemiological unit;
- Quarantine facilities should account for the bird's behaviour.

13. Actions of other international organisations at global and regional level

13.1. FAO – ECTAD Unit for the Middle East – Prof. Aidaros

Prof. Aidaros explained that the creation of the ECTAD Unit was motivated by the creation of the OIE-FAO Regional Animal Health Centre (RAHC).
He presented the purpose, role and objectives of the RAHC, where OIE and FAO implemented harmonized strategy.
He exposed RAHC activities since its implementation in May 2007, principally on AI, Rinderpest, FMD and RVF.
Then, he detailed specific activities of the FAO notably through TCP programs.
At last, he emphasised that the partnership between FAO and OIE should continue to develop in the future, including in the Middle East region.

13.2. UN-OCHA (Office for the Coordination of Humanitarian Affairs) – J-L Tonglet

M. Tonglet provided a presentation on the impact of a possible pandemic on social and economic systems. The presentation began with a recall of the UN strategy to respond to avian influenza and prepare for a possible pandemic. As part of this strategy, OCHA is concerned with preparing for a possible pandemic. While WHO provides leadership for ensuring support to Ministries of Health, OCHA focuses on the non health aspects of a pandemic.

A severe pandemic would test the resilience of nations, businesses and communities across the globe. High rates of worker absenteeism would contribute to social and economic disruption, impair essential services and cause instability in financial markets. A pandemic would also give rise to humanitarian crises, resulting from food, water and energy shortages and large population movements.

This eventuality was acknowledged by last year's ministerial conference in New Delhi, which recommended that nations broaden the scope of pandemic preparedness to include continuity

of essential services and incorporate pandemic preparation into national disaster management structures.

13.3. USDA – Dr Howard

Mr Howard presented results of avian influenza surveillance in wild birds in the USA.
He noted firstly that no birds have been infected with HPAI H5N1 in the United States.
He described the potential routes of avian influenza introduction in the USA, then the main goals of surveillance plan and the sampling strategy including 5 components: investigating large mortality events in wild birds, surveying live wild birds, surveying hunter-killed birds, using sentinel animals, such as backyard flocks, and sampling the environment by collecting fecal material.
More than 164 000 samples were realized from April 2006 to March 2007 and 95 000 from April 2007 to March 2008 and only 45 samples were positive to LPAI.

He summarized that over a quarter-million wild bird AI samples were processed in two years, involving the 50 states, 45 labs, universities, national agencies, that wild bird surveillance provides an early warning system and adds to global knowledge of AI ecology, and that transmission via illegal trade or poor biosecurity is probably more likely than by wild birds. Mr. Howard then gave a brief presentation on current knowledge of HPAI H5N1 regarding species world-wide known to have become infected with the virus, either as wild birds, captive birds, or birds infected experimentally. He described the distribution of H5N1 as known to date in 118 species of birds among 13 families, including 59 species in the wild, 41 captive/sanctuary species, 18 species experimentally infected, and that mortality has been shown in 100 species. While among wild birds, waterbirds (ducks, geese, and shorebirds) are most often found to be among those infected with H5N1, many other species can be potential transmitters as well and he encouraged conference participants to ensure that if their hunting birds are fed either quail or pigeon that these birds come from a source known to be disease-free.

14. Conclusions

The main conclusions of this workshop are:

- Participants admitted the high quality of expertise provided during the workshop, helpful to clarify discussion ;
- All of participating countries have implemented national contingency plan in accordance with international recommendation and some of them (Kuwait, Jordan, KSA) have already experimented disease occurrence ;
- Subject matter concerning falcons was highly appreciated but this specific issue should be studied further to gain a better understanding of avian influenza issues in these kinds of birds;
- Protection of high value birds against avian influenza infection was highly discussed, notably when these birds are transported to other countries;
- Participants were unanimous to congratulate the Kuwaiti administration for their warmful hospitality and perfect organisation of the workshop. They thanked the staff of the OIE Regional Representation for their efforts in being always present to support Members in providing assistance and collaboration to achieve planned activities in the region ;
- Special attention was referred to the excellent translation Arabic/English which facilitate enormously the understanding and the discussion.

15. *Recommendations (* annex 1)

16. *Agenda (A*nnex 2)

17. *List of participants (A*nnex 3)

Annex 1: Recommendations

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Considering that:

1. The risk of H5N1 HPAI introduction to Middle Eastern countries taking into account the global distribution of the virus and current epidemiology, includes trade routes, wild birds flyways and the uncontrolled movement of live birds including smuggling;
2. Falcons, among most bird species, are susceptible to infection with highly pathogenic avian influenza (HPAI) viruses, including H5N1 Asian strain;
3. Routes of infection or spread of disease may include direct or indirect contact with infected birds or excretions, feeding of infected birds / carcasses and contact with a contaminated environment or fomites (equipment, etc..);
4. There is a need for harmonized international certification for the international movement of domesticated and captured wild birds, including falcons, in accordance with the OIE Standards;
5. Currently there is only limited data available on the efficacy of vaccination as a measure to protect falcons against HPAI H5N1 infection;
6. According to the recommendation of OIE/FAO Conference on Vaccination held in Verona in March 2007, vaccination can be considered by countries to protect valuable captive birds (zoo birds, etc..) following the outcome of a risk assessment;
7. Effective surveillance and biosecurity will contribute in reducing the risk of disease introduction and spread;
8. the role of wild birds in the epidemiology of H5N1 HPAI remains poorly understood;
9. A regional action plan for avian influenza has been adopted by Member countries during the 9th Conference of the Regional Commission in Damascus.

The participants of the workshop recommend that:

Regional countries should:

1. continually conduct and update national risk assessments taking into consideration the risk of HPAI introduction through wild birds, captured wild birds, including captive falcons and others;
2. encourage and facilitate communication with stakeholders (farmers, falcon's associations…) regarding preparedness and control of Avian Influenza;
3. implement effective protective measures to prevent the spread of disease through controlled and uncontrolled movement of live birds, including birds that have been captured from the wild;
4. implement effective biosecurity measures in falcon collections, at falconry events, falconry hospitals, relocation sites and any other place where there is a risk of disease spread and introduction;
5. consider to harmonize their sanitary certificates for domestic and wild birds in the region, in compliance with OIE Standards and taking the model of certificate proposed by the OIE Regional Representation for the Middle East as a guidance;
6. ensure that captive falcons only be fed meat that is known not to have been infected or contaminated with infectious agents notably avian influenza;
7. improve sharing and exchange of information, strengthen communication and awareness between Member countries relating to the disease situation on all birds, including those in captive falcons;
8. undertake strategic and coordinated wild birds surveillance using standardised methodology as provided by OIE and FAO and ensuring high utility data are reported in a timely fashion;
9. ensure disease control responses are targeted at measures in domestic poultry and captive birds and their habitat as recommended by OIE and FAO;
10. in collaboration and support of the OIE and FAO, through the Regional Animal Health Centre, update their preparedness and contingency plans, according to the regional action plan for avian influenza as adopted during the 9th Conference of the Regional Commission in Damascus.

Annex 2: Agenda

Regional Representation
For the Middle East

Avian Influenza in the Middle East: Preparedness and Control
Role of wild birds and birds of prey
OIE Regional Representation for the Middle East
Kuwait City
20 – 22 April 2008
Agenda – Version 2

Time	Activity	Presenter
	20 April	
08.30 – 09.00	Registration and Introduction	
09.00 – 10.30	Opening Ceremony	Dr Ghazi Yehia, OIE-ME CVO of Kuwait Animal Resources sector of PAAF of Kuwait
10.30 – 11.00	**Break**	
11.00 – 11.45	Current Avian Influenza situation worldwide and the OIE standards Discussion	Dr Keith Hamilton OIE
11.45 – 12.30	The updated situation of Avian Influenza in the Middle East Discussion	Dr Yehia OIEME
12.30 – 14.00	**Lunch Break**	
14.00 – 15.30	**Kuwait Preparedness Presentations** Vaccination of Kuwait Zoo birds against A.I. Biosecurity in Kuwait Zoo AI surveillance in Kuwait AI Lab Diagnosis	F. Mulla M. Ahmed Z. Tadassee A. Athiya
15.00– 15.30	**Break**	
15.30 – 17.30	National AI Contingency Plans	Countries'presentations

21 April		
09.00 – 9.45	Current evidence of the role of wild birds in the epidemiology of HPAI H5N1 Asian lineage Discussion	Dr Ruth Cromie, FAO UNEP-CMS/FAO AI Tak Force
9.45 – 10.30	Results of wildlife surveillance for avian influenza viruses in wild birds (Egypt experiences) Discussion	Dr Carlos de Mattos NAMRU
10.30 – 11.00	**Break**	
11.00 – 11.45	The potential role of birds of prey and hunting falcons in the epidemiology of avian influenza. Current evidence and implications for the Middle East Discussion	Dr Ruth Manvell VLA
11.45 – 12.30	Measures to control avian influenza in domestic birds Discussion	Dr Keith Hamilton OIE
12.30 – 14.00	**Lunch**	
14.00 – 15.00	Vaccination as a tool to complement the control of avian influenza - considerations Discussion	Dr Keith Hamilton OIE
15.00 – 15.30	Harmonisation of legislation on movement control of wild and domestic birds Discussion	Dr Pierre Primot OIE - ME
15.30– 16.00	**Break**	
16.00 – 17.30	Forum of Discussion	
22 April		
9.00 – 10.00	Actions of other international organisations at global and regional level Discussion	Dr Aidaros, FAO Dr Howard, USDA-APHIS JL Tonguet, UN-OCHA
10.00 – 10.30	**Break**	
10.30 – 11.30	Presentation of recommendations, discussion and agreement	
11.30 – 12.00	Closing ceremony	
12.00 – 13.30	**Lunch**	

Annex 3: List of participants

AVIAN INFLUENZA IN THE MIDDLE EAST: PREPAREDNESS AND CONTROL

ROLE OF WILD BIRDS AND BIRDS OF PREY

20 – 22 APRIL 2008

KUWAIT CITY, KUWAIT

List of Participants

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