（Abroad・~~Domestic~~）OH Ally Course Submodule 4 report form（Student）   <u>2022/12/23</u>

Name	Patrick Reteng
Laboratory	Collaboration and Education
Year (Grade)	D4
Internship institution	Australian Center for Disease Preparedness
Internship period	Internship period: 10/31/2022 - 11/03/2022 (Departure Date from Sapporo: 10/29/2022, Arrival Date in Sapporo: 11/19/2022)
Purpose	Attending World Organization for Animal Health（WOAH）Regional Expert Group Meeting for diseases of poultry in Asia and the Pacific Region as observer

- The reason why you chose this institute

The Australian Center for Disease Preparedness is one of the leading institutions conducting research on zoonotic diseases and it is also hosting several WOAH reference laboratories, and I believe by visiting this institution I would be able to establish several connections that might be beneficial for my future.

As for the reason I would like to attend the WOAH expert group meeting on AI is because, AI itself is a very important One Health subject. Not only it is a zoonotic disease, but the impact on poultry population could also cause significant damage to the economy and food security. As a non-veterinary, I have limited knowledge about the trials and tribulations undergoing on the poultry sector. Thus, by attending this meeting I hope I would gain more understanding on the issues surrounding AI, from the veterinary side, and hopefully I would be able to apply those knowledges in the future.

- Result of the activity   （about 800 words、provide photos, tables and figures that clearly show the activities during the period）

Through this three-day meeting, I was able to observe how the information sharing at the international level is conducted. Experts coming from different countries gather to share valuable information, and as a non-veterinarian, I was able to learn a lot regarding AI management in poultry and the politics linger around human- and animal-health.

The event itself consists of a three-day meeting, with the first day being

the information sharing part. Each expert from the invited country gave a short presentation about the current AI situation in their country. Started with the global situation from the WOAH headquarters, then from each member country. Each giving update on what sort of surveillance is being conducted, what kind of high pathogenic (HP) AI or low pathogenic (LP) AI is currently circulating, the vaccination (and post-vaccination monitoring), and other researches related to AI that are being conducted. What is interesting for me is that neighboring countries across Asia-Pacific have different circulating virus strain, and thus highlighted the importance of information sharing among the countries. Detection of AI from other wild animals (including possums, foxes, and some animals from the order *Mustelidae* native to North America) were also reported. It is also interesting to see more countries conducting active surveillance on wild bird, which is often missed from the picture. Meanwhile in Japan, an interesting outbreak happened at an Emu farm – a type of ratite native to Australia. It was particularly hard to handle, due to unfamiliarity with the species. I also learned the challenges with implementing AI vaccination and was surprised that Indonesia is vaccinating the poultry. However, I could not get a clear picture on how post-vaccination in poultry is being conducted.

Figure 1. Participants of the WOAH Regional Expert Group Meeting for diseases of poultry in Asia and the Pacific Region as observer

One presentation that particularly picked my interest is about the surveillance in the wild bird. The problem with the current surveillance is that the surveillance strategy is backward, means that the surveillance focuses on looking for poultry diseases in wild bird (i.e. surveillance of AI in wild waterfowls). What is being observed in the poultry is just an emphasize of a small portion of what is

happening in the wild bird of population, which happened to spill to the poultry population. By investigating what disease is circulating in wild bird, hopefully the next spillover can be predicted or at least mitigated. Additionally, the surveillance on other birds besides waterfowls are still limited while these birds might have important role in spreading AI. For example, the great back-blacked gull is thought to be the one introducing the currently circulating H5 virus from Europe to North America. While in Australia, the introduction of H4N8 virus is thought to be carried by migrating red-necked stint. Another interesting part is that the importance of integrating ecology and behavior of wild bird into the surveillance. For example, Australia's waterfowls are known to be non-migratory, making the ecology unique where Australia act as a "sink", in a way that a virus strain is easier to be introduced, but less likely to get out from Australia. Taking all things into consideration, it is important to design an effective surveillance strategy that put the role of wild birds and wildlife into account.

Figure 2. Panelist of the discussion panel on the first day.

On the second day, the meeting was mostly concern about data sharing platform and introduction of new technology for AI surveillance. Two of these platforms that were promoted was World Animal Health Information System (WAHIS) and OFFLU. WAHIS is a platform to share epidemiological data of animal disease and member countries are asked to contribute to reporting

transparency. As for OFFLU, it is a joint WOAH-FAO network on animal influenza (including avian influenza, swine influenza, and more). This network provides resources for Member Countries to assist in the prevention, diagnosis, surveillance and control of animal influenza. This network plays an important role in the Vaccine Candidate Meeting (VCM) in which the network provides some technical material for the WHO meeting to determine the target of influenza vaccine will be administered that year. The highlight of second day to me was the presentation of new technologies for AI surveillance. One particularly interesting part is the usage of environmental DNA/RNA, especially the one that exist in air. Since AI is caused by an airborne pathogen, it makes perfect sense that virus can be detected in the collected DNA/RNA in the air. A device that can collect DNA/RNA from air is introduced and seem to be adequate in detecting AI genome. And because it is a handheld device with great mobility, the device was combined with a remote-controlled drone to collect some air DNA/RNA from a cave where bats are roosting. This one talk opened my mind of some creative ways in surveillance, especially in peripheral region.

At the end of the first and second day, a panel discussion with the expert was held, discussing about the issue discussed on that day. It was fascinating to see how knowledgeable the experts are, and their communication skill is impeccable. Through this discussion, several political issues were brought in, regarding countries' policy, the situation between human and animal health, inequality in funding, logistics, and virus data sharing for vaccine development. As a people who works in the laboratory and data analysis side, we often are not in touch with the existing political problems. Attending this meeting has made me more aware about those problems, and hopefully it would be useful in my future career path.

On the third day, the discussions and opinions were made into a draft of "expert recommendations" which will be presented on the next WOAH meeting. The experts, once again sit together and evaluating the drafts before the final version will be circulated. What I was able to get from this meeting is how knowledge obtained from the research is being translated to policy, or a recommendation to the policy maker. Understanding of the current politic climate and interest of each country member are important, especially with so much politics surrounding the policy making process.

- What do you think the positive impact of the activity will have on your further career path?

I was able to update my connection. I met an AI expert from Indonesia and was given update the job situation in Indonesia. It appears that in certain governmental sector (i.e. Ministry of Agriculture), a PhD degree without a Master degree is somewhat not acknowledged. Additionally, I met another expert from ACDP who is currently doing some metagenomic project for virus surveillance in Indonesia, to whom I was able to share my details and interest on the project.

Figure 3. Photo with delegation from Japan and Dr. Wong (ACDP).

- Advice for your junior fellows

Communication skill is important, especially when you are sharing your research in a forum. It is important that you can give a clear, understandable, and engaging presentation, especially when your audience is not proficient in your research area. It is also important to gain as many connections as you can through any forums you attended.

In collaborative approaches, such as One Health, it is important to be broadminded. When going to a graduate school, it is very easy to develop a niche knowledge (i.e. knowledge of the study field). However, with the growing demands for multisectoral collaboration, an expertise in the field should also be supported by knowledge of other field of research.

Approval of supervisor	Institution・Official title・Name
	Departement of Collaboration and Education, International Institute for Zoonosis Control – Associate Professor – Junya Yamagishi, PhD

※1　Send the electronic file to the WISE Program Office

※2　Attach a copy certificate of the content of internship activity that is prepared by the counterpart at the internship institution (any form with a signature of the counterpart).

※3　The Steering Committee for the WISE Program will first confirm the content of this report and report will be forwarded to the Educational Affairs Committee for credits evaluation.