CHAPTER 5

DISCUSSION AND CONCLUTION

The outbreak of avian influenza in Northern Thailand

Data from interviewed of H5N1-confirmed poultry risers in Chiang Mai indicated that avian influenza was introduced into Chiang Mai province by quail farmer in Sarapee district brought replaced quails from farm which located in massive death-reported area, lower Northern Thailand, in late of year 2003, and then the birds in their farm were died., the farmer sold out their birds to another farms in Sankampang and Hangdong. After that there were backyard chickens around the farm were died. DLD staffs collected samples from massive-death farms and sent to the laboratory and results in late of January 2004. Results from disease investigation in Nan province revealed the middle man in Nan province brought poultry in Lower North of Thailand which had been reported massive death of chicken in late of 2003. Then the chicken meat was sent to markets in Chiangklang Chaloem Phra Kiat and Boukleu district. After that there was reported backyard chicken around markets were died. This results show that the main source of H5N1 spread to those provinces may be man. Capua et al (11) reported that the density of the poultry population in the infected area and the frequent contact between farms by feed trucks and abattoir trucks and other vehicles have been associated spread of virus. To confirm with studies made by Alexander (11) and the results suggested that the spread of disease was principally due to the movement of personnel and equipment between farm such as the movement of caretakers, farm owners and staff trucks and driver moving birds or delivering food. Martin reported considered that the main ways in which the virus

passes from one region to another area are: sale of infected birds to markets, departure of wild waterfowl which have visited infected backyard poultry units, the wearing of contaminated footware or closing people working or selling poultry, or the transfer of contaminated cages and egg crates to markets or poultry farms(16).

Chiang Mai and Lamphun are high density of commercial poultry population areas in Northern Thailand. Most of broiler chicken farmer were contracted farm whereas most of layer chicken are individual farm. In contracted farm, the chicken companies have the protocol of disease control and prevention and farmer must follow. In the outer hand, the disease prevention practice in individual farm was depending on the decision of farmer. The results regarding farm management especially farm biosecurity indicated that most of layer chicken farmers have not yet good practices such as did not use the disinfectant to decontaminated personnel and equipment in/out of farm, no method of personnel restriction and open housing system. In backyard poultry, the disease prevention practice was not performed. The results indicated that the high risk of disease outbreak in farm/flock especially in backyard chicken and layer chicken farm and also suggested by Martin et al.(16)

In this study, we collected 7,202 cloacal swabs in study areas, Chiang Mai-Lamphun and Nan, during August 2004-July 2005 and the results were negative for H5N1 virus in all of the samples. This result agreed with nationwide active surveillance performed by DLD or called “X-rays Survey” in the same period and the results showed negative to H5N1 virus in Chiang Mai, Lamphun and Nan provinces. These results may reflect the effectiveness of control measures during and after disease outbreak in those provinces. Unfortunately, there were reports of re-immerge of disease in many provinces in many parts of Thailand. It is very interesting that why

there have been disease outbreak in some province while Chiang Mai, Lamphun and Nan province can control the disease and have to find out.

In this study, risk factors associated with introduction of H5N1 to poultry farms/flocks in Chiang Mai-Lamphun study area are avian influenza outbreak in nearby farms (OR 19.34, 10.04-37.26 CI), sharing a common water source with other farms in the community (OR 5.69, 2.02-16.00 CI), purchasing replacement stock (OR 3.13, 1.40-7.04 CI), and open-type housing system(2.37, 1.31-4.28 CI). All of risk factors associate with farm management practice especially in biosecurity, which also suggested by Alexander, Martin et al(5, 16). The decrease risks for the introduction of H5N1 to poultry farm/flock are culling poultry in farm when HPAI infection and used tap water as water source, which are the measures of disease control and eradication made by DLD (2004). This finding, culling poultry in farm, is contrast to the epidemiological studies, avian influenza subtype H7N2 outbreak in Pennsylvania during 1996-1998 that depopulation furthered the spread of disease to nearby flocks(14). This literature also reported that new poultry farms were diagnosed with AI within a few days after depopulating AI-infected chickens in laying facilities located within 1 to 1.25 miles. However, the differentiation of finding is has not yet been well known but may have been caused by the differentiation of the subtype of the causal viruses. In Thailand, AI outbreak is caused by H5N1, highly pathogenic strain, but in Pennsylvania the cause of outbreak is H7N2, low pathogenic strain. Alexander suggested that in both natural and experimental infections virulent viruses have tended to show much poorer transmission from infected to susceptible chickens and turkeys than viruses of low pathogenic strain(4).

In Nan study area, there are only 5 commercial poultry farms and the most of census of poultry in Nan province are backyard chicken. In this study, risk factors associated to the introduction of H5N1 into poultry farm/flock are avian influenza outbreak at nearby farms (OR 10.55, 3.40-32.82 CI), and no method in feces management (OR 2.30, 1.26-5.47 CI). The decrease risks for the introduction of H5N1 to poultry farm/flock are the use of disinfectant in farm/flock (OR 4.59, 1.58-13.36 CI), and the use of treated water in farm/flock (OR 3.03, 1.29-7.12 CI). These findings agreed with the results of Chiang Mai-Lamphun study area which the risk factors and the protective factors associate with the biosecurity practice in farm and suggested by Alexander.(4-6)

Elther et al (2002) used the GIS software, VetGIS, in the contingency plan implemented during AI epidemic in Italy, 1999-2001. He reported that the GIS is a very powerful and flexible software tool for effective management of spatial data. He also reported that the VetGIS can be used to enhance the area based risk factors and it serves as a basis for minimization of epidemiological risk and economic damage. In this study, the smallest unit of attribute data was the census of poultry of each riser in each village. So this system can retrieve the census of poultry and poultry riser in all of villages in the study areas. The system can also define the outbreak area for stamping out of poultry in infected area and also define the restrict area which can be used to control the animal movement, vehicles and others in area at risk, which agreed with Elther. However, for effective use of GIS in disease control and animal health system, data in the system should be up-to-date for the accurate data analyzing, reporting and for the decision maker to get the best value from the system.

In conclusion, the outbreak of H5N1 in Northern Thailand caused by movement of the sick birds into these areas. The control measures during disease outbreak including stamping out, quarantine and the use of disinfectant to clean the infected areas were effectiveness, which were shown in the result of active surveillance during 2004-2007. The risk factors of H5N1 introduction to the farm associated with the biosecurity practice of risers. Therefore, to prevent the H5N1 outbreak in poultry farm the farmer should improve their farm management especially in biosecurity system. The GIS can be used as data database of animal health information system and the assisting tools for outbreak management.