**MEMORANDUM**

**TO:**  David A. McMurrey, Committee Management Specialist

**FROM:** T. G., Health Scientist, subcommittee on avian influenza

**DATE:** March 14, 2005

**SUBJECT:** Submission of avian flu background study

As per our agreement on March 20, 2005, I am submitting the background study report on avian flu.

This report describes what avian flu is and ways to combat the disease, it is going to outline a check and balance system to make the farmers follow guidelines.

I hope that this all meets with your support and approval. I believe this information is imperative to public safety.

Sincerely,

T. G.

Health Scientist

Subcommittee for Avian Flu

Encl: Technical background report on avian flu

**Report on**

**AVIAN FLU PREVENTION**

Submitted to

David McMurrey

Committee Management Specialist
Center for Disease Control and Prevention

May 4, 2005

This is a background study report on avian flu that will describe what avian flu is and the consequences it is having on the bird population as well as the human population. This report will also focus on measures poultry farmers can and should take to combat the disease.

**TABLE OF CONTENTS**

**LIST OF ILLUSTRATIONS . . . . . . . . . . . . . . . . . . 3**

**Abstract . . . . . . . . . . . . . . . . . . . . . . . . 4**

 **I. INTRODUCTION . . . . . . . . . . . . . . . . . . . 5**

 **II. CAUSES OF AVIAN FLU . . . . . . . . . . . . . . . . 6**

 **III. EFFECTS OF AVIAN FLU . . . . . . . . . . . . . . . 7**

 Controlling the Virus . . . . . . . . . . . . . . **7**

 Effects of the Economy . . . . . . . . . . . . . . **8**

 **IV. SOLUTION TO THE PROBLEM . . . . . . . . . . . . . . 9**

 Avian Flu Symptoms . . . . . . . . . . . . . . . . 9

 **V. GUIDELINES . . . . . . . . . . . . . . . . . . . . 11**

 Daily Checklist . . . . . . . . . . . . . . . . . 11

 Weekly Checklist . . . . . . . . . . . . . . . . 11

 Monthly Checklist . . . . . . . . . . . . . . . . 11

 **VI. CONCLUSION . . . . . . . . . . . . . . . . . . . . 12**

 List of References . . . . . . . . . . . . . . . . 12

**LIST OF FIGURES**

**Figure Page**

 1. Outbreaks of Avian Flu in Asia . . . . . . . . . . 7

 2. Poultry Being Destroyed That Have Virus . . . . . . 8

 3. Infected Bird . . . . . . . . . . . . . . . . . . . 9

**ABSTRACT**

Avian flu is a term used to refer to all types of bird flu which is a disease that is carried by birds worldwide. Birds in the wild do not usually get sick from the disease. The virus is mainly passed when a bird comes in to contact with a contaminated surface. When domesticated birds get the disease it can become deadly in most cases, this has caused the death or culling of over 100 million birds worldwide. In the last few years the disease has infected and in some cases killed humans. There is not yet a vaccine to prevent people from getting the disease. The poultry business is also being affected causing an economic impact in many countries.

**Report on**

**AVIAN FLU PREVENTION**

**I. INTRODUCTION**

Avian flu is a very big concern for the health science community. The type of avian flu found in most birds is type A influenza. Birds are natural hosts and carriers of the disease and it poses virtually no problem to wild birds. Influenza viruses adapt and mutate. This is where we run in to problems with the disease. Avian influenza poses a problem to domesticated birds, specifically chickens, turkeys and ducks. When domesticated birds get the disease they become sick and in most cases die, the disease in three main ways; saliva, nasal secretions, and feces. Major outbreaks have occurred and 100 million birds have either died or had to be euthanized. Bird flu is also starting to mutate to infect humans. Usually these humans have had some contact with contaminated surfaces and some times contact with the infected birds themselves. The respiratory disease and prevention committee that I head up has come up with ways to combat the disease.

The purpose of this report is to educate poultry farmers on the disease and way’s they can combat the infection. This report contains the plan that the committee on avian flu has set up to fight the disease. The farmers in the poultry field will need to follow the guidelines that we have set up for them to fight the disease on their own farms. This report will be broken in to five parts those will be (1) causes of avian flu, (2) the effects avian flu has on poultry and the public, (3) solutions to the problem, and (4) guidelines that poultry farmers need to use to combat the disease.

**II. CAUSES OF AVIAN FLU**

Only influenza type A viruses infects birds. However all known subtypes of influenza A are found in birds. There are many types of avian flu. There are 16 different types of hemagglutinin subtypes of the virus and 9 different neuraminidase protein subtypes. The virus that mainly circulates with birds is the H5N1 virus. The disease was first isolated in South Africa in 1961. In 1997 we have the first reported case of human infection. In that year the virus infected 18 people and killed 6. So far most cases of humans being infected with the disease have been from being in contact with contaminated poultry or contaminated surfaces. There have been a few cases of human-to-human infection but this is very rare.

Avian flu occurs naturally among wild fowl worldwide. Avian influenza is very contagious and can pass very easily to other birds. The disease is carried by wild birds in their intestines. Wild birds do not normally get sick from the disease because they have a natural immunity to the ailment. Poultry do not have the immunity to the virus and this can and will in most cases cause death to the infected poultry, the disease can be passed in three main ways; saliva, nasal secretions, and feces. If poultry farmers do not sanitize their farms then this increases the risk of both poultry and humans getting the disease and passing it on to infect others.

**III. EFFECTS OF AVIAN FLU**

In the last few years more and more outbreaks of the flu have occurred. Most have been in Asia and many humans have contracted the virus and died. Since the 1997 outbreak in Hong Kong where 18 people were infected and 6 died there have been larger outbreaks. Notably the latest outbreaks in Southeast Asia in 2003-2004 have caused the death of 33 people in Thailand and Vietnam. [1] Most human cases have been from the H5N1 virus but there has also been one human death from the H7N7 strain of the virus, since the major outbreak in Southeast Asia the H5N1 virus has emerged in 12 countries.



Figure 1. Outbreaks of Avian Flu in Asia [2]

**Controlling the Virus**

In the last few years over 100 million domesticated birds that have been infected either have died from the disease or were destroyed. The birds that were destroyed were euthanized to contain outbreaks. At the moment there has not been a pandemic with avian flu, just major outbreaks. A pandemic virus appears when a process called an antigenic shift takes place. An antigenic shift is when a major or abrupt change occurs in influenza A viruses. The changes are caused by new combinations of the HA and or NA proteins on the surface of the virus. When this happens, a new influenza A virus subtype results. This is the first step toward a pandemic. Even though avian flu is starting to mutate and infect humans it is not yet a pandemic because it does not get passed readily from human-to-human if avian flu does become a pandemic then it would most likely circulate for years as a seasonal epidemic. The CDC is watching the virus very closely for signs that the disease might become a pandemic. Two of the countries currently affected by the avian flu outbreaks are China and Thailand, these countries account for 15% or worldwide poultry shipments. In these countries 80% of all poultry are produced in small backyard farms that are scattered throughout the rural areas of the countries. This makes the control of the disease a lot harder.



Figure 2. Poultry Being Destroyed That Contain Virus

**Affect Avian Flu has on the Economy**

The economy is also affected by avian flu. The Chinese Academy of Social Sciences reports that the economic losses to the industry could exceed $12 billion USD. This is in part because of so many birds being culled. The other part is consumer concern. While there is no evidence that people can become sick by eating poultry or other poultry products the negative public perception is still there, the price of poultry is at the lowest point that it has been at in years. Ultimately the companies in the poultry industry that have not been infected by the disease are still being affected. China is not excluded from the rest of the world. Indeed China and other parts of Asia have had most of the outbreaks and deaths but there are outbreaks in other parts of the world. In Gonzales, TX there was a quarantine that prompted the slaughter of more than 6,600 chickens. This is also prompting several international bans on the importation of U.S. and Mexico poultry.

**IV. SOLUTIONS TO THE PROBLEM**

The solutions to the problem are actually very easy. Since poultry becomes infected through contaminated surfaces then we need to make sure that surfaces get cleaned, if birds do not get to come in to contact with contaminated surfaces then this dramatically cuts the chance that the fowl will become infected. Another solution to the problem is for farmers to know what an infected bird looks like and what the symptoms are. By doing this we can either cull the infected bird before it infects others. This way we can potentially stop an outbreak before it begins.



Figure 2. Infected Bird

**Avian Flu Symptoms**

An infected bird’s symptoms are:

* Being lethargic, prolonged periods of being fluffed up, excessive sleepiness.
* Weight loss or poor weight gain, a prominent breastbone
* Changes in feather condition or failure to replace old feathers
* Sneezing, coughing (sounds like clicking), difficulty in breathing, and a discharge from nostrils
* Eye discharge, crusty or swollen eyelids, or eyes appear cloudy or bulge
* Loose droppings or droppings that contain undigested seeds, also a change in color of droppings
* Seizures, circling, or paralysis
* Growth or white crust around the beak
* Swollen joints, deformities of wings, toes and legs; or favoring one leg over the other; or not holding the wings the same way

These are always to protect the poultry but what about the farmer. Some easy precautions to take would be for farmers to wear gloves when they have any contact with poultry or surfaces that poultry might have had contact. This includes wearing gloves when cleaning surfaces. Even if the farmers are wearing gloves they need to wash their hands under warm to hot water for at least two minutes scrubbing the entire forearm with a disinfecting solution. Cleaning and disinfecting are two different things. Cleaning is the process of removing visible debris off a material. This is usually with soap and water. Cleaning will get rid of a lot of microbes just by wiping and rinsing but it does not get rid of them all. The bacteria that are left behind can breed very quickly; some can double their entire population every 20 minutes. Disinfecting or sanitizing is the destruction and removal of bacteria, viruses and other things the naked eye cannot see. By using a disinfecting solution to wash their hands they are greatly reducing the chance that they will become infected.

**V. GUIDELINES**

The committee for respiratory disease and prevention put together a subcommittee that deals with avian influenza have put together some guidelines for poultry farmers to follow in the prevention of avian flu. We have also come up with some punishments that the farmers will have if they do not follow the guidelines. To enforce the rules and regulations that we will set up we will send food safety inspectors to make surprise inspections. If the guidelines are not followed we have come up with some penalties for the farmers. If an inspector decides that a farm is not following the new mandate then a fine will be given and a five-day period will be given to see if the farm has done everything they were supposed to do. If they have not then the farm will be shut down for no less than thirty days with an additional fine. At this time a review will be done if everything is up to par then the farm will be allowed to open again on a probationary period. If the farm has still not done what was required then the farm will be shut down permanently. Their will be a daily, weekly and monthly checklist that the farmers will go by.

Daily Checklist

* Sanitize poultry coops three times a day
* Use Alternating yards every day
* Move poultry to separate yard while cleaning all fecal matter in empty yard
* Disinfect all tools used for cleaning
* Sanitize all equipment used on poultry
* Keep temperature cool so bacteria and viruses do not breed

Weekly Checklist

* Check every bird for signs of infection or ailment

Monthly Checklist

* Clean and disinfect all aspects of warehouse or yard that poultry is in
* Clean and disinfect all equipment including tractors, harvesters, crates poultry is held, etc.

**VI. CONCLUSION**

Since the ways to combat the disease are relatively simple there is no reason for as many avian influenza deaths to happen, poultry or human. All of these solutions to combat the disease are not going to cure the disease by any means but by being diligent in all of these ways then we can at least diminish the risk, especially the risk of one day this virus turning in to a pandemic. The virus turning in to a pandemic is the CDC’s utmost concern. While the CDC is working on a vaccine for humans this is still in the works and there is no timeframe of when it could possible be completed. If we are diligent in this consumer confidence will come back and hopefully the economy will regain most of what it has lost. Farmers having a good knowledge of how to detect the disease will also prevent major outbreaks from happening thus less spread of contagion.

**LIST OF REFERENCES**

1. Center for Disease Control and Prevention (2005), *Avian flu key facts.* Retrieved March 25, 2005 from <http://www.cdc.gov>
2. World Health Organization (2005). *Avian flu updates.* Retrieved March 30, 2005 from <http://www.who.int>
3. CBC News (2005). *Background on pandemics.* Retrieved April 4, 2005 from <http://www.cbc.ca>
4. Center For Infections Disease Research and Policy (2005). *Economic impact of avian flu.* Retrieved April 18, 2005 from <http://www.cidrap.umn.edu>