



A Poultry Health Program for Developing Countries

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The Poultry Health for Development project of Avian Flu School International was developed in response to the need among rural households for information about poultry health and disease management. Poultry is a vital resource for rural families and communities across Africa, particularly for the poor. Women and children at the village level often raise chickens, ducks, guinea fowl, and other poultry. The sale of eggs and chickens provides money to buy food during droughts, to purchase materials for the home, and pay for school fees and health care costs, in addition to providing meat and eggs for consumption. Unfortunately, as much as 80 percent of smallholder poultry in Africa die from poultry diseases, despite the existence of several cheap and effective vaccines and treatments. Therefore, improving poultry health extension services to help prevent and more effectively treat poultry diseases has tremendous potential to improve the livelihoods and the health of the rural poor in Africa. Training workshops in developing countries using the Avian Flu School curriculum revealed that in areas where poultry have heavy disease burdens, smallholder poultry keepers did not see the relevance of highly pathogenic avian influenza. The Poultry Health for Development curriculum developed by the Avian Flu School International provides a basis for the design and implementation of appropriate poultry health disease prevention strategies, by asserting that poultry owners can be engaged to protect their flocks when they understand the poultry health and management issues that must be overcome for their protection.

Background

More than 90% of the human population in the developing world depends on free-ranging poultry flocks as sources of food, and these flocks contribute significantly to food security. However, poor poultry disease management in developing countries compromises the benefits of poultry production for villagers and the rural poor. Historically, smallholder poultry producers have paid scant attention to the health of their flocks for several reasons:

- Historically, nothing happens when they report diseases to animal health authorities or there is little remedy which can be offered.
- Owners often do not realize or believe that poultry diseases can be prevented. Because Newcastle disease and other poultry diseases are so common, it may appear that heavy losses from disease are inevitable, so poultry keepers simply ignore or accept them.
- There may be little incentive to expend resources to control a disease outbreak in a population that the owner believes is going to die anyway.
- Many control strategies, such as culling sick birds, are unappealing because they result in less food security.

Methods. The Poultry Health for Development curriculum was designed to meet the need for information necessary to recognize, prevent, and control poultry diseases in developing countries.

The major project components are as follows:

Develop a poultry health curriculum. Program personnel developed a poultry health curriculum for training field veterinarians and paraveterinarians working in Africa specifically, but for developing countries more generally. The course was designed to be delivered over a five day period. Teaching modules were modeled on those used for Avian Flu School (AFS) and included interactive learning techniques and exercises. A full wet-lab was included in the course, providing trainees with instruction in personal health and safety, poultry handling techniques, external examination of birds for clinical signs and parasites, how to collect, pack, and ship diagnostic samples, as well as necropsy procedures, the recognition of lesions, and tissue collection methods.

Develop tools for clinical diagnoses of poultry diseases. A diagnostic decision-tree and disease chart were developed to assist animal health workers in identifying and diagnosing poultry diseases in the field. In addition, a handbook of poultry diseases with a focus on those important in Africa, was assembled, covering the major diseases and non-infectious conditions.

Conduct pilot course(s) with new poultry health curriculum. The course curriculum was pilot tested from July 14-18, 2008 at Sokoine University of Agriculture (SUA)

Table 1. The training curriculum modules, their themes and the specific lessons covered.

Module	Topic	Lessons
Module 1	Village and smallholder poultry production	Poultry benefits and challenges Introduction to fowl Managing production Marketing local chickens
Module 2	Diagnosing disease in poultry	Recognizing disease states Disease transmission Causes of clinical signs Causes of disease Investigating clinical cases Diagnosis—a systems approach Diagnostic procedures
Module 3	Disease prevention	Biosecurity on smallholder farms Biosecurity in villages Biosecurity for live bird markets Applying biosecurity to your own site Vaccinating poultry
Module 4	Community poultry health	Sensitizing local leaders Developing a poultry health plan
Module 5	Duck production and health	Duck production Managing ducks Marketing ducks and their products Diseases of ducks

in Morogoro, Tanzania. The course was facilitated by six experts: two from SUA, one each from the University of Ghana, Makerere University in Uganda, and the University of Nairobi in Kenya, and a private practicing poultry veterinarian from Togo. At the conclusion of the course, participants completed a course evaluation that included suggestions for improvement of the curriculum.

Major Findings

The responses of participants in the first pilot of the poultry health course were positive overall (Figure 1). When asked which parts of the curriculum were of the most value, 41% indicated that all parts were equally valuable, while 41% suggested the sections on disease prevention were of most value. Nine percent of the participants indicated that the module on ducks was the most important, and some comments suggested that more information on the diseases of turkeys should be included as well. Finally, 9% found the community poultry health module to be of the most value. Several participants specifically commented that disease prevention in village settings needed more time for discussion, and some commented that they would like to have more detailed information about how to implement community poultry health projects. Further comments from the participants suggested that additional materials on poultry marketing or enterprise management and ways to supplement poultry diets at little or no expense should

be added. Several participants noted the value of the interactive exercises in the course, and suggested adding more exercises that focus more specifically on typical village poultry disease scenarios.

Discussion

In the delivery of avian influenza trainings to poultry owners in Africa, it was found that there was little enthusiasm for disease prevention measures when resources were scarce. In places where poultry have heavy disease burdens people are reluctant to invest in preventative strategies. In light of these obstacles, a community-based strategy was developed to vaccinate free-ranging poultry flocks with thermostable Newcastle vaccine. This strategy served two objectives:

- 1) To engage village leaders in the efforts.
- 2) To prevent the death of birds, thus changing how poultry owners viewed their flocks.

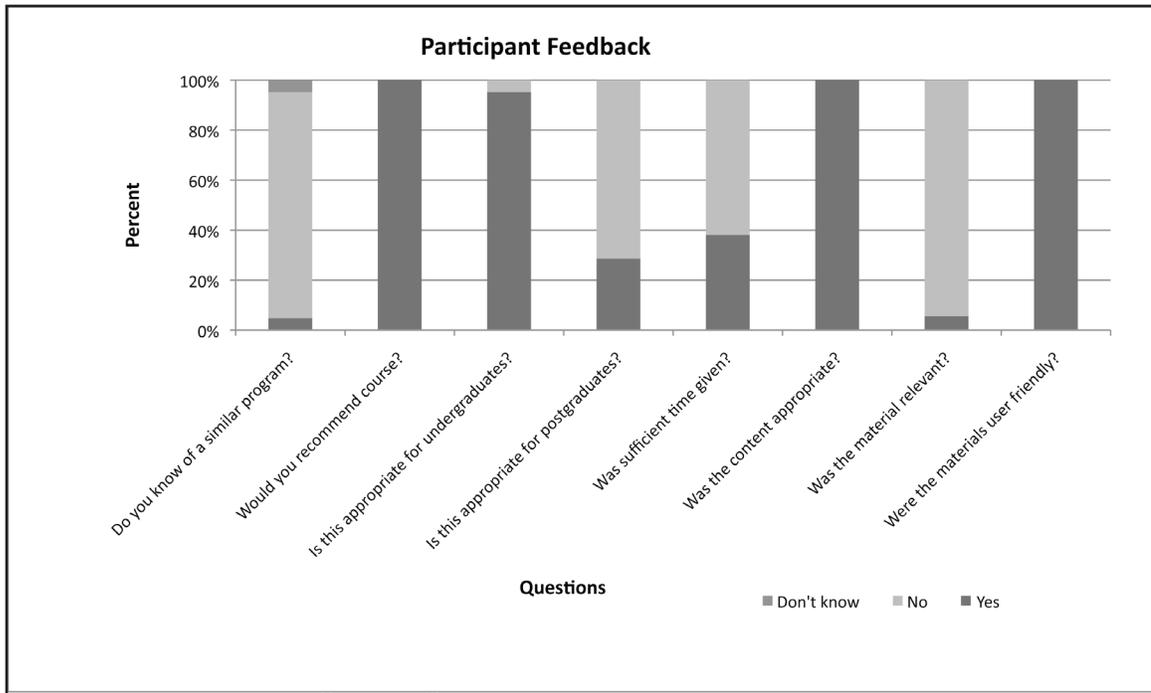
The subsequent phase of the strategy was to improve capacity in the veterinary and animal professional communities to recognize, diagnose, and treat poultry diseases. The poultry health course and handbook were developed as part of this latter phase in the program (Avian Flu School, *Forthcoming*).

Practical Implications

Historically, poultry production in the United States was complicated by high morbidity and mortality rates until vaccination for Marek's disease (a poultry disease causing paralysis and death) in 1970 gave producers the ability to prevent infection in their flocks. However, following the control of Marek's disease through vaccination, other poultry diseases became more evident. Similarly, the vaccination of poultry for virulent Newcastle disease in Africa may result in the appearance of new diseases that threaten poultry health, some of which may present human health threats as well. Poultry health must be considered comprehensively by the veterinary medical community rather than diseases being treated individually without a broad contextual framework.

Poultry owners need to be provided with methods for protecting their flocks in ways they can understand

Figure 1. Evaluation of the first pilot of the Poultry Health for Development curriculum by participants.



and implement in the settings in which they live. Many recommendations for stopping the movement of HPAI H5N1 Avian Influenza in free-ranging populations of domestic fowl, for example, are too long-term to impact immediate needs in developing countries. Shifting poultry production to commercial facilities, especially in rural areas, is not possible within any reasonable time frame. Introducing cold storage to rural locations to reduce the need for local live chickens is also not achievable until critical infrastructure and economic obstacles are overcome. Eliminating village poultry would therefore

have devastating consequences for the food security of rural households, as there is no equivalent food source with which to replace it.

The Poultry Health for Development curriculum developed by the Avian Flu School International provides a basis for the design and implementation of appropriate poultry health disease prevention strategies, by asserting that poultry owners can be engaged to protect their flocks when they understand the poultry health and management issues that must be overcome for their protection.

The Poultry Health for Development Program conducted village poultry health and production courses for women participating in the GL-CRSP Enhancing child Nutrition through Animal source foods Management (ENAM) Program in Ghana. Here, the women from the Navrongo ENAM community in northern Ghana are seated in the shade for the training course, which involved demonstrations of chicken and guinea fowl husbandry along with vaccinations. Photo by David Bunn.



Further Reading

Avian Flu School International. *Handbook of Poultry Diseases Important in Africa*. (Forthcoming).

Knueppel, D. 2009. "A Socioeconomic Impact Assessment of a Chicken Newcastle Disease Vaccination Project on Households in Rural Tanzania." *Research Brief 09-01-AFS*. Global Livestock Collaborative Research Support Program (GL-CRSP). University of California, Davis.

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Avian Flu School (AFS) was created to address the need for a train-the-trainer program to disseminate the knowledge necessary to minimize the health and economic impacts of H5N1 HPAI by improving the ability of a country, district or community to prevent, respond to, and recover from an outbreak. The project is led by Dr. Carol J. Cardona, University of California, Davis. Email: cjcardona@ucdavis.edu.



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East and West Africa, Central Asia and Latin America.

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