International Alliance for Biological Standardization

World Organisation for Animal Health
Founded as OIE

Vaccination and Surveillance for
High Pathogenicity Avian Influenza in poultry:
Current Situation and Perspectives

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Economic assessment to optimize surveillance systems

Background: Economic analysis can be used to assess surveillance systems and optimize them, based on the objectives and resources available. By quantifying costs and benefits, Economics provides policy makers with the evidence required to assess trade-offs, identify inequities regarding the distribution of the costs and benefits, and ultimately make decisions about surveillance. Conducting economic assessments of surveillance systems is critical in low-income settings, where competition for resources is extreme both in the public and private sectors.

Materials & Methods: We present two economic analyses that were conducted to assess surveillance systems in two different settings. The first one analyses the cost-effectiveness of surveillance in live bird markets with the objective of early detection of a known pathogen in a free but high-risk area, using the case of H7N9 surveillance in Northern Vietnam during 2017. The second study looks at the trade-offs between costs and sensitivity of environmental sampling surveillance for H5 virus monitoring in an endemic country with limited resources, using the case of Bangladesh.

Results: The first study shows that several hundreds of infected birds would be sold by the time the virus is expected to be detected in the live bird market when using a traditional surveillance strategy with 40 chicken samples collected twice a week. The adoption of innovative technologies that reduces the time between sampling and diagnostic test results, reduces the number of infected birds by 10-30% but increases the weekly surveillance costs by approximately 30%. In the second study, different strategies regarding number of samples and pooling, were compared. Given the high prevalence of avian influenza in the country, pooling pools leads to only small savings, even in a scenario where sensitivity is not affected by pooling. On the other hand, reducing the number of samples and focusing on areas in the market where the prevalence is higher, reduces the costs by 55% while affecting sensitivity by only 24%.

Conclusions: These studies show how economic analysis can generate useful information for decision makers. However, the lack of data regarding how surveillance information is used, hinders the capacity to monetize the benefits of surveillance and conduct cost-benefit analyses. If coupled with effective control measures, surveillance systems for early detection of avian influenza can be considered public goods, and the use of taxpayers' money can be justified.