Effective use of economic tools for assessing livestock diseases and their control

– the case of cost benefit and cost-effectiveness analyses

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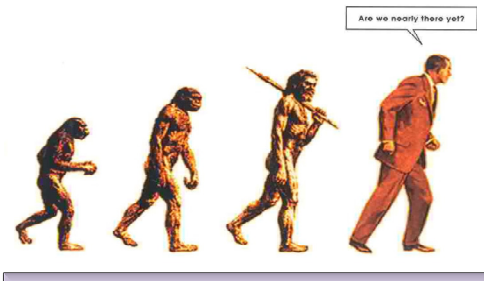


The Problem

Economics is not being used effectively within the field of animal health to improve resource allocation and hence has had reduced impact on decision making processes of many of the recent animal health crises

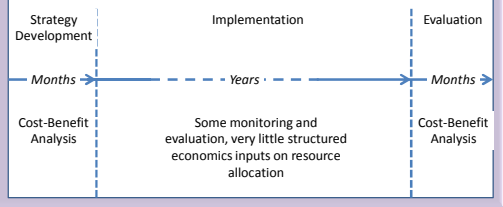
Background and the evidence

Economists and economics are generally called into an animal health decision making process to either justify a defined strategy (ex ante) or to assess the impact of a past programme (ex post) (Rushton, 2009). Normally cost-benefit analysis is the preferred economic tool for assessments (Rich et al, 2005). However, cost-benefit analysis has limitations for assessing the effectiveness of resource use during the implementation of animal health interventions.

Those cost benefit analysis assessments that are carried out very rarely report a negative finding. In the authors experience only two negative assessments can be recalled – UK tuberculosis control measures by John McInerney in the 80s and FMD control in Bolivia in the 90s. The latter was rejected and a new analysis was performed that demonstrated that FMD control was economically profitable.

Of even greater concern is that economic tools and skills are rarely used during the implementation phases of animal health programmes. Given that ex-ante and ex-post assessments are relatively short in comparison to implementation phases, economics is not contributing and adding value to the largest element of animal health projects (see Figure 1).

Figure 1. Animal health intervention timeline.



Potential Solution

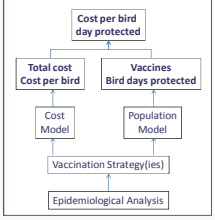
Cost-effectiveness analysis is a commonly used tool in the field of human health economics to investigate how to improve the allocation of resources with human health interventions (Pettitti, 2000). There are a number of steps involved in a cost-effectiveness analysis from stating the problem, identifying the interventions, costing these interventions and determining the desired outcomes. Using the costs with the outcomes – cost-effectiveness measures can be estimated and used for real-time decision making with regards to an intervention or a combination of interventions. If used within an economic framework cost-effectiveness analysis permits an improvement in resource allocation to achieve a defined goal. Cost-effectiveness analysis turns a cost into a value using denominators that reflect the interests of the people making the decisions and can be a range of monetary and non-monetary values. Cost-effectiveness of any measure will change over time – animal health actions aim to reduce disease and hence risk. As the cost-effectiveness of a specific intervention decreases due to a changing disease situation it is necessary to have **TRIGGER POINTS.** A series of tools are required according to the stage of disease control or status.

An application

Vaccination against highly pathogenic avian influenza has generated a number of challenges that relate to technical issues of vaccine, delivery of the vaccine and the costs. Recent work on vaccination strategy development has requested an estimation of the cost per bird vaccinated a useful measure at farm level, but of limited value for a control programme. Therefore time has been spent in trying to combine epidemiological concepts of bird days actually protected and/or bird days at risk (of infecting other flocks or humans) protected by vaccination as the more appropriate outcome measure from a vaccination policy (see Figure 2).

Initial results indicate that (i) the costs per bird vaccinated are significantly higher for backyard systems than for intensive units; (ii) even though vaccination per bird is cheap in industrial broilers the cost-effectiveness per bird day protected is very low (ii) current data on poultry populations and disease outbreaks do not allow a strong basis for estimation of outcome measures. The work is a foundation to evaluate the cost-effectiveness of increased expenditure to achieve higher vaccination coverage for bird populations at risk such as continuous vaccination versus campaigns. It should also enable comparisons between disease control interventions such as vaccination of broiler flocks versus hygiene measures at markets to protect humans from infection and further spread to other flocks. In general the process of cost-effectiveness analysis has stimulated thought on the allocation of resources to vaccination in a number of countries.

Figure 2. Structure of a cost -effectiveness model.



References

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Concluding remarks

Cost-effectiveness analysis requires multi-disciplinary teams - veterinarians, disease control experts, epidemiologist, economists, sociologists, communication experts – to measure the contributions of prevention and control interventions to overall outcomes of disease strategies and policies. Through the **application** of **cost-effectiveness** concepts and models the allocation of **scare resources** can be improved during the implementation of animal health programmes and projects. If this could be achieved, economics would be seen to be adding significant value to the success of such interventions. In short cost-effectiveness analysis turns an intervention **cost into a value.**

You can know the cost of everything and value of nothing!