

Balancing Active And Passive Policies For The Prevention Of Transboundary Diseases

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ABSTRACT

Recommendations are clear on what to do in the transition between control and eradication of a transboundary disease to disease freedom in the need to strengthen surveillance systems, establish emergency funds in the case of an outbreak and possibly the need to buy additional insurance policies to cover compensation payments. However the process of how to allocate budgets between active (surveillance) and passive (funds, insurance) policies are not discussed. With ex ante preventive controls the costs are clear cut, but the benefits are dependent on the likelihood of outbreaks occurring and their probable extent. The actual costs of ex post measures can only be predicted with information on the probabilities of outbreaks occurring. Similar notions apply to insurance and in game theory/ transaction cost theory the ex ante response to access to insurance is "Adverse selection", namely only those most at risk are likely to choose to adopt voluntary insurance. The ex post response is "Moral hazard", where a farmer who has insurance will be less careful about biosecurity and surveillance. These issues will be discussed within the context of the need to provide practical methods such as decision tree analysis in order to help veterinary services select the most appropriate mix of policies to help prevent entry of transboundary disease, and to reduce the exposure to a reintroduction of such diseases. Examples from Mexico and Europe will illustrate the method proposed.

Keywords: Transboundary disease, Prevention, Policy, Risk

INTRODUCTION

The hypothesis of the paper is the world still has some way to go in developing strategies to prevent transboundary diseases and reducing their impact if these diseases occur. This is clearly shown by the recent reintroductions of transboundary disease in Argentina, Brazil, Mexico, the United Kingdom and Uruguay, and the failure to detect and control these diseases at an early stage. It is suggested that the problem is not a lack of resources but achieving a balance:

1. of how these resources are used in "active" and "passive" policies of prevention; and
2. between who provides these resources.

The former is important in ensuring that risks and impact of transboundary disease are reduced, and the latter in avoiding adverse selection and moral hazard issues.

CONCEPTUAL FRAMEWORK

When approaching the subject of preventing transboundary diseases it was realised that not all countries are in the same institutional environment. For example the rich industrialised countries have moved, in the last 10 to 15 years, into an animal health disease status for many transboundary diseases of free with low risk, where it is feasible to undertake large scale stamping out programmes if diseases reappear. However, other countries, which are important producers of livestock products and in some cases very important international exporters, have recently changed status from eradication of transboundary disease to being free. This latter group of countries have limited capacity of carrying out large scale stamping out programmes due to a combination of the structure of their livestock sector, veterinary services and budgetary constraints. These countries are described as high risk and still have some way to go before moving to a low risk status. The issues with regards allocation of resources for these two groups and how to finance active and passive prevention policies are very different. Whilst it is difficult to generalise for different countries and diseases, in the authors experience there are common trends and Table 1 presents a conceptual framework of major issues with regards transboundary disease prevention for countries with different animal health status.

Table 1. Conceptual framework for thinking about passive and active policies for the prevention of transboundary diseases.

Issues		Status		
		Control & Eradication	Free (high risk)	Free (low risk)
Major costs		Control campaigns	Surveillance dominated by the State	Surveillance dominated by farmers
		Surveillance dominated by the State	Emergency Funds & Insurance (mix of private & State)	Emergency Funds & Insurance dominated by the State
Response to:	Slow detection	Blanket campaigns	Return to control & eradication programmes	Use funds to "stamp out" disease and retain free low risk status
	Regular detection	Ring followed by blanket campaigns	Use funds to try and "stamp out" disease, but often have to resort to returning to control & eradication programmes	
	Rapid detection	Ring campaigns	Funds used to "stamp out" disease and move towards free low risk status	
Major considerations		Costs of control - direct and indirect (trade)	Balance between active and passive measures of prevention	Balance between private insurance non-compulsory, private insurance compulsory & State insurance
		Farm-level incentives to participate	Costs of losing trade	Incentives to improve farm-level biosecurity & surveillance
			Impact on the rural economy including social costs	Adverse Selection where there is no compulsory insurance
			Disincentives to invest in processing and marketing facilities	Moral hazard if the insurance mechanism is provided by external sources
				The State may have to pay for spillover costs of an outbreak
Livestock systems		Majority of livestock in extensive systems with communal land access	Livestock found in a mixture of extensive and intensive systems	Majority of livestock found in intensive units with clear private property rights
Countries		Low & middle income countries	Middle income countries with strong livestock export potential and objectives	High income industrialised countries possible exceptions Chile & South Africa

APPLICATION OF IDEAS IN QUALITATIVE AND QUANTITATIVE TERMS

Dealing first with the balance of how prevention resources are used, this is an issue of greatest concern in countries and regions of countries described above as free high risk i.e. recent change from control and eradication to free status. Such changes in status are celebrated, particularly if the battle to gain free status has been a long and difficult one. The change requires a new animal disease strategy, which may include cost savings if the free status is associated with the dropping of vaccination policies. Guidelines on new strategies are clear in the need to strengthen surveillance systems, establish emergency funds and where necessary buy insurance policies. However, the guidelines are weak on where to allocate prevention resources, and experience has shown that often too much attention is devoted at the early stages of the transition in animal health status to what are described as "passive" policies (Rushton & Upton, In Press), i.e. funds and insurance to cover the costs of a reappearance of the disease, rather than dedicating a large bulk of finance to "active" policies to ensure that a reappearance of the disease is quickly detected. Recent setbacks in FMD control in Latin America and CSF in Mexico demonstrate that epidemiological and economics skills are not well applied in these transition periods, and certainly do not reach policy decision making levels. To improve this situation it is suggested that decision tree analysis (DTA) be used in aiding decisions on the allocation of prevention resources (see Table 2 for an example from Mexico). Whilst DTAs do not provide definitive answers, the process of analysis stimulates thought and discussion on where epidemiological and economics data are lacking and how to improve resource allocation. Each analysis is case specific, and it is the process of analysis, which is the value of the method, not the final answer.

Table 2. Decision tree analysis results for different mixes of active and passive CSF prevention policies in Mexico (modified from Ayala et al. 2005).

Strategy	Actual				Alternative with more emphasis on surveillance and fewer resources to passive policies			
	No outbreak	Mild	Moderate	Severe	No outbreak	Mild	Moderate	Severe
Cost ('000 US\$)	0	69.3	565.7	2,924.4	0	115.3	375.6	1,241.2
Probability*	0.800	0.050	0.100	0.050	0.800	0.100	0.075	0.025
Result ('000 US\$)	206.26				70.73			

* The probabilities were expert values and are open to discussion.

On the balance between where resources come from to pay for different policies in the prevention of transboundary diseases there are two dilemmas that face policy makers. First in countries such as the United Kingdom, the farming community have become accustomed to the farm and national impacts of transboundary diseases being covered by government coffers. This creates a "moral hazard" where the farmer takes less care about their own biosecurity and surveillance. As the farmer is the first line of any surveillance system and their biosecurity systems underpin the ability of national responses to transboundary disease this creates a serious weakness. In addition, the long-term absence of many transboundary diseases has created a relaxed attitude to surveillance, implying that disease surveillance systems in many developed countries have innate weaknesses.

The UK government and public are increasingly concerned about such problems. Inquiries into the control of FMD and bovine tuberculosis compensation payment schemes indicate that the blanket government insurance policy will be modified. Financing of a new form of insurance is the second dilemma. Taking the example of bovine tuberculosis in the UK, a disease which is not evenly distributed across the country, some farms have a higher risk of contracting the disease than others. In addition, farmers have knowledge of their own and their neighbour's history of tuberculosis. Finally, testing in low risk areas may be every three years rather than annual. A private insurance market to cover the impact this disease will, therefore, have farmers buying policies where they know their risks are high of being detected positive and also farmers in less risky areas buying insurance only in the year they are tested. This situation of "adverse selection" means that insurance premiums will reflect high risk and therefore will be high, which may lead to the government implementing laws of compulsory private insurance. However, it is recommended that policy decisions for financing insurance are based on a combination of: (1) comparison of the public and private costs of surveillance, insurance and transboundary disease outbreaks for three potential options of non-compulsory private insurance, compulsory private insurance and State insurance; and (2) an analysis of the institutional environment of the main actors with regard to stimulating actions on surveillance and biosecurity. The government also needs to be aware that even with private insurance an outbreak of similar proportions to the 2001 FMD crisis will probably require government support.

DISCUSSION

Governments face two areas of difficulty when setting policy for the prevention of transboundary diseases: the resource dedicated to passive and active policies and who should be responsible for financing these activities. The former is a particularly important one for countries and regions moving to a free status and recent experience has shown that policy making has lacked the application of epidemiology and economics skills imbued in tools such as decision tree analysis. With regard to the latter, it is argued that dilemmas of sources of funding only come to the fore when a country has enjoyed a period of free status and needs to consider how farm-level surveillance and biosecurity measures need to be placed in a institutional environment where individuals are given more responsibility for their animal health actions.

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