



Briefing: Endemic livestock disease

- Endemic livestock diseases cost UK agriculture as much as £600m per year and adversely affect animal welfare and trade.
- Over the past 30 years, few measures to curb the impact of these diseases have been effective.
- There is growing recognition that endemic diseases could be tackled successfully through a coordinated approach that emphasises high-quality science.



SUMMARY

Endemic livestock diseases in cows, pigs, sheep and poultry are likely to be the single largest cause of financial loss in British agriculture, and adversely affect animal welfare and trade.

These diseases include mastitis, tuberculosis, avian colibacillosis, and salmonellosis, and are caused by infectious micro-organisms, some of which rapidly evolve to escape control.

Endemic diseases are distinguishable from exotic imported diseases such as Schmallenberg, and notifiable outbreaks such as foot-and-mouth, because they are a constant problem that has troubled agriculture for several decades.

Unlike outbreaks, endemic diseases attract little political attention, and have been accepted by policymakers as part-and-parcel of modern farming.

However, there is growing recognition that these diseases could be tackled successfully, and that a 'big picture' approach to endemic disease prevention and control that includes scientific research and coordinated action would also protect farms against exotic and notifiable disease.

IMPACTS

Endemic livestock disease hurts farm income due to loss of productivity (e.g. lower milk and meat yield) and through

loss of valuable stock from premature death and mandatory culling. Substantial costs are also incurred in treatment and prevention, where it is feasible.

Data from the last comprehensive economic analysis, published in 2005 (see table below), shows an estimated cost to the UK livestock industry of £600m per year.

Top five endemic infections by cost to UK agriculture

Cattle	Mastitis	£179.7m
Poultry	Salmonellosis	£104.7m
Cattle	Bovine viral diarrhoea/mucosal disease	£39.6m
Cattle	Tuberculosis	£ 29.7m
Sheep	Enzootic abortion	£ 23.8m

Source: Richard Bennett and Jos IJpelaar, 2005, 'Updated estimates of the costs associated with 34 endemic livestock diseases in Great Britain: a note', *Journal of Agricultural Economics* 56, 135-144.

Endemic diseases also impact animal welfare. The problem is compounded by the intensification of farming and rapid growth of global trade.

The direct risks to human health are difficult to quantify. But these diseases may carry collateral risks for public health because antibiotics are dispensed in large volumes to cure them, potentially contributing to the spread of antibiotic resistance.

NEW SCIENTIFIC CHALLENGES

Microbial evolution and increasing animal trade across borders are likely to introduce new variants of endemic pathogens, and allow previously 'exotic' agents such as the Schmallenberg virus to become established in the UK.

Infectious organisms that cause endemic livestock disease can also adapt to escape control by existing drugs or vaccines.

There is a pressing need to understand the molecular interactions between disease-causing micro-organisms and the animals they infect. This will mean studying diseases in farmed species, not just in laboratory models, if we are to develop useful knowledge for the design of new control strategies.

BIG PICTURE SOLUTIONS

Policy-makers should consider:

- 'Big picture' approaches to disease control. The policy response to one disease may lead to changes in farming practice that inadvertently help spread another. Disease prevention and control need to be considered in the round.
- Scientific research to help develop improved rapid diagnostic tools and more effective control measures, as detailed in the Society for General Microbiology's *Position Statement on Food Security and Safety*.
- Coordination of industry, state veterinary service, and scientific and advisory services is likely to be vital for cost-effective control but is currently missing from efforts in England and Wales. Scotland and the Republic of Ireland offer models for effective policymaking in this area.

A SHORT HISTORY

Government-led campaigns after WWII effectively wiped out bovine tuberculosis, swine fever, and brucellosis in British agriculture (in 1960, 1964, and 1981, respectively). These campaigns featured compulsory testing of herds, vaccination, and culling of infected livestock.

However, not all livestock diseases are amenable to control by these approaches and effective drugs or vaccines are often not available. Respiratory, reproductive and gut diseases remained problems during the same period, partly due to higher stocking densities that encouraged disease spread.

These 'diseases of production' became a constant source of economic loss and indeed were accepted as part-and-parcel of modern agriculture.

FURTHER READING

- Department for Environment, Food and Rural Affairs, 2004, Animal Health and Welfare Strategy for Great Britain.
- Food and Agriculture Organization of the United Nations, 2014, World Livestock 2013: Changing disease landscapes.
- S.J. More, et al., 2011, 'Animal Health Ireland: providing national leadership and coordination of non-regulatory animal health issues in Ireland', O.I.E. Scientific and Technical Review 30, 715-723.
- Rural Economy and Land Use Programme, 2011, The governance of livestock disease: putting epidemiology in context, Policy and Practice Note No. 34.
- Society for General Microbiology, 2011, Position Statement on Food Security and Safety.

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