Health, zoonotic pathogens and parasites

Control of exotic disease outbreak in wildlife: bovine tuberculosis

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DOI: 10.20315/evmc.2025.085

Control of exotic disease outbreaks in wildlife is made more difficult for two-species diseases that are chronic in nature. Bovine tuberculosis (TB) is such a disease when it has been transported by cattle movement into previously disease-free areas. I will describe several events where disease has been introduced through cattle movement and the adaptive management approach taken after discovering this disease has been transmitted into badgers (*Meles meles*), which are capable hosts. In the first case, identified in badgers in 2017 with the origin of infection being cattle imported from Ireland, the area for control had to be defined by surveying for badger main setts, identifying the probable infected areas by defining a minimum infected area (MIA) and adding a buffer onto this to account for incomplete information and spatial spread within badgers. The management approach in terms of culling or vaccination then had to be defined. Culled animals were examined post mortem and whole genome sequencing was used to examine the relationship between cattle and badgers, and the control strategy revised. This was repeated each year with the management moving from culling to vaccination, and now moving toward disease freedom. This will be the first eradication of bovine TB from the badger/cattle system in the UK. I will also report on four other outbreaks in the otherwise disease-free low risk area, and how these are progressing. This generic approach of defining an MIA and buffer has been used in other outbreak scenarios, and I will present the six necessary steps to perform adaptive management for other focal disease outbreaks.