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Re-Emergence of Rabies on an Island Nation: A once in a lifetime event, or an indication of more to come?

Background: Rabies virus variants evolved to circulate primarily in specific reservoir species; these mammalian species are found on all continents except Antarctica. The canine variant is responsible for most human deaths worldwide. Canine rabies was eliminated from Taiwan in 1961 and the island was assumed to be free of rabies virus. In 2012 Taiwan discovered rabies viruses in Formosan Ferret Badgers. Taiwan CDC requested US CDC assistance: identifying the source of rabies, implementing rabies surveillance systems, and developing disease prevention strategies.

Methods: Wildlife surveillance data were analyzed for spatial, temporal, and phylogenetic trends. Site visits were conducted to identify potential animal reservoirs and high risk human populations. Rabies surveillance methods were reviewed and protocols discussed with local and national health authorities.

Results: Historical wildlife surveillance data suggest a fatal disease epizootic in ferret badgers began as early as 2006. Phylogenetic analysis of rabies virus from ferret badgers in 2012 suggests that this variant is a descendent of the canine rabies virus variant eliminated from Taiwan in 1961. Spatial analysis of rabid ferret badgers suggests a natural barrier may be preventing spread into northern Taiwan.

Conclusions: In the 51 years during which Taiwan was considered rabies-free, no terrestrial wildlife rabies testing was conducted. Limited wildlife rabies surveillance is likely true for many other countries and island territories, which currently are considered rabies-free. Vaccination of dogs should be prioritized, as they may be a vector to human exposure after interaction with ferret badgers. Additional surveillance studies are needed to determine the true extent of disease spread. Primary disease prevention among potentially exposed humans and domestic animals is crucial and wildlife management options should be investigated.