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Emerging vector borne infections in Europe - prevention, early detection, control and the impact of wildlife

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Vector borne infections continue to emerge and spread in Europe. Climate, environmental change and globalisation may be important drivers but there is no simple explanation for this development.

Migrating birds play an important role in the introduction of new vector borne pathogens. In 2018 mosquito borne West Nile virus spread further north than ever before reaching far into Germany. Mosquito borne zoonotic Usutu virus, which also has a reservoir in wild birds, has in recent years resulted in large outbreaks in birds in Holland and Germany. Migrating birds may also introduce new tick species, and the number of Hyalomma ticks recorded in Germany in 2018 was record high. These ticks are potential vectors of the zoonotic Crimean Congo fever virus.

Exotic mosquitoes are firmly established in southern Europe and continue to move north. Some of these new mosquitoes are vectors of important human pathogens like Dengue, Chikungunya and Zika virus with the former two already responsible for serious outbreaks in humans in southern Europe. The zoonotic pathogens with their reservoirs in wild and domestic animals are benefitting from the increased abundance of wildlife and increasing temperatures. Recently the spread of African swine fever from wild pigs to domestic pigs has been associated with mechanical vectors in the Baltic countries.

The potential for incursions and spread of vectors and pathogens can be modelled, but detecting actual outbreaks and establishment of new vectors still relies on a combination of active and passive surveillance. New approaches are being developed including citizen science projects successfully detecting and mapping disease vectors as far north as Sweden and Finland.

Control of vector borne infections with a wildlife reservoir remains a great challenge. With Bovine ephemeral fever, Epizootic haemorrhagic disease and Rift valley fever queuing up in the Eastern Mediterranean it may be wise to plan ahead.