

Ports and Airports: Gateways to Vector-Borne Diseases in Portugal Mainland

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Abstract : Vector-borne diseases are transmitted to humans by mosquitos, sandflies, bugs, ticks, and other vectors. Some are re-transmitted between vectors, if the infected human has a new contact when his levels of infection are high. The vector is infected for lifetime and can transmit infectious diseases not only between humans but also from animals to humans. Some vector borne diseases are very disabling and globally account for more than one million deaths worldwide. The mosquitoes from the complex *Culex pipiens* sl. are the most abundant in Portugal, and we dispose in this moment of a data set from the surveillance program that has been carried on since 2006 across the country. All mosquitoes' species are included, but the large coverage of *Culex pipiens* sl. and its importance for public health make this vector an interesting candidate to assess risk of disease amplification. This work focus on ports and airports identified as key areas of high density of vectors. Mosquitoes being ectothermic organisms, the main factor for vector survival and pathogen development is temperature. Minima and maxima local air temperatures for each area of interest are averaged by month from data gathered on a daily basis at the national network of meteorological stations, and interpolated in a geographic information system (GIS). The range of temperatures ideal for several pathogens are known and this work shows how to use it with the meteorological data in each port and airport facility, to focus an efficient implementation of countermeasures and reduce simultaneously risk transmission and mitigation costs. The results show an increased alert with decreasing latitude, which corresponds to higher minimum and maximum temperatures and a lower amplitude range of the daily temperature.

Keywords : human health, risk assessment, risk management, vector-borne diseases

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