

# Epidemiological Trends of Trans-Boundary Tick-Borne Encephalitis in Europe, 2000-2019

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## Abstract

Tick-borne encephalitis is a neuroinfection caused by the Tick-Borne Encephalitis Virus. It is transmitted primarily by tick bite and rarely because of consuming raw milk. It has been discovered in the 1930s. The disease covers the Euro-Asia region which also known as the tick-borne encephalitis belt. It is prevalent in most parts of Europe. The top affected parts of Europe include Southern Germany, Switzerland, the Czech Republic, Austria, Slovakia, Hungary, the Baltic countries, Slovenia, Poland, parts of Scandinavia, and European Russia. Since 2000, in Europe the total number of confirmed cases reported to the European CDC was 51,519. There were signs of decreasing number of cases in 2014 and 2015 however after 2015 a steadily increasing number of cases with involvement of countries which had no history of tick-borne encephalitis. Within Europe, from 1950 to 2006 ticks were prevalent between 600 to 2000 meters above sea level of altitude. The determinant factors for the spread of tick-borne encephalitis are host population size, weather, movement of hosts, altitude, and local regulations on socio-economic dynamics of the local and travelling people around the foci areas. The mean incidence rate of tick-borne encephalitis since 2000 to 2019 in Europe was 3.27 while the age adjusted mean incidence rate was 2.19 per 100,000 population size. The recent increase is mainly associated with human activity as a dominant factor since there are new foci areas with no significant climate change. This review used several articles and data sources from the European Center for Diseases Prevention and Control and Polish National Public Health Institute to examine the trend of TBE across Europe and in Poland in particular.

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