

Population density and water balance influence the global occurrence of hepatitis E epidemics.

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In developing countries, the waterborne transmission of hepatitis E virus (HEV), particularly the genotypes 1 and 2, leads to the onset of large recurrent outbreaks. In order to identify the geographical regions at higher risk of HEV epidemics and the conditions most favorable for the transmission of the virus, we compiled a dataset of HEV outbreaks and used it to obtain models of HEV distribution across the planet. The main three variables that best predict the geographical distribution of HEV outbreaks at global scale are population density, annual potential evapotranspiration and precipitation seasonality. At a regional scale, the probability of illness due to HEV in the Ganges watershed is negatively correlated with the river discharge and positively correlated with the number of reported outbreaks. Similarly, the temporal occurrence of HEV outbreaks in the region is negatively correlated with the discharge of the Ganges river. Combined, our findings suggest that population density and water balance are the main parameters influencing the occurrence of HEV epidemics.