

# Risk factors for death and illness in dogs imported into the United States, 2010–2018

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## Abstract

CDC estimates 1 million dogs are imported into the United States annually. With the movement of large numbers of animals into the United States the risk of disease importation is a concern, especially for emerging diseases. Dogs that arrive to the United States ill or dead are investigated by public health authorities to ensure dogs are not infected with diseases of concern (such as rabies). We identified factors associated with illness and death in imported dogs and estimated the initial investigation cost to public health authorities. Dog importation data from the CDC's Quarantine Activity Reporting System were reviewed from 2010–2018. The date of entry, country of origin, port of entry, transportation method, and breed were extracted to examine factors associated with illness and death in dogs during international travel. Costs for public health investigations were estimated from data collected by the Bureau of Labor Statistics and Office of Personal Management. Death or illness was more likely to occur in brachycephalic breeds (aOR=3.88, 95%CI 2.74–5.51). Transportation of dogs via cargo (aOR=2.41, 95%CI 1.57–3.70) or as checked baggage (aOR=5.74, 95%CI 3.65–9.03) were also associated with death or illness. On average, 19 dog illnesses or deaths were reported annually from 2010–2018. The estimated annual cost to public health authorities to conduct initial public health assessments ranged from \$2,071–\$104,648. Current regulations do not provide adequate resources or mechanisms to monitor the rates of morbidity and mortality of imported dogs. There are growing attempts to assess animal welfare and communicable disease importation risks; however, responsibility for dogs' health and well-being is overseen by multiple agencies. A joint federal agency approach to identify interventions that reduce dog morbidity and mortality during flights while continuing to protect U.S. borders from public health and foreign animal disease threats could be beneficial.

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