

VETERINARY PUBLIC HEALTH

Food animals driving zoonoses

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At least 60% of human emerging infectious diseases (EIDs) are zoonotic in origin. Policy debates and investment predominantly focus on controlling diseases emerging from wildlife, such as severe acute respiratory syndrome (SARS) or Ebola. However, food animals can also act as reservoirs for zoonotic pathogen spillover — with drivers and causal agents potentially differing from wildlife spillover. Now, Joachim Otte and Ugo Pica-Ciamarra from the Food and Agriculture Organization have analysed the pathogen characteristics and drivers of wildlife and food animal emerging infectious zoonotic diseases (EIZDs).

Otte and Pica-Ciamarra analysed datasets covering 335 EID events from 1940 to 2004, finding that 37% of zoonotic events were associated with animals raised for food production. In 86% of these cases,

food animals were a known reservoir for the associated pathogen; in 11% of these events food animals acted as amplifiers or 'bridge' hosts. Bacteria accounted for 70% of zoonotic pathological agents — significantly more than in wildlife, where 41% of zoonotic pathogenic agents were bacterial in origin. However, 38% of viruses were zoonotic in wildlife, compared with 14% in food animals. Drug resistance was significantly more prevalent in EIZD pathogens associated with food animals than in those from wildlife (15% versus 6%).

Land-use change is an important driver of EIZDs from wildlife, but Otte and Pica-Ciamarra found that food industry changes (35%) and agricultural industry changes (24%) were the main drivers of EIZDs from food animals — with only 5% of EIZDs being linked to land-use change. The authors note that agricultural and related industries can be regulated to mitigate EIZD risks — an approach that would be easier to implement than regulating human interactions with wildlife. Veterinary public health policies must be enforced for this approach to be effective — particularly in regions where food animal production is expected to increase.

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