

Zoonotic epidemics and pandemics: what, from where, and how to be prepared?

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Zoonoses are infectious diseases crossing species barriers from animals to humans. This spill-over event initially causes sporadic disease cases, and if resulting in a local outbreak, might expand to an epidemic, and ultimately to a pandemic. Zoonoses have occurred throughout the history, and the known zoonotic epidemics and pandemics cover the era from the first recorded plague until the very recent SARS-CoV-2 pandemic. Zoonotic epidemic or pandemic requires, in addition to changes in the microbe, also changes in environment, reservoir population, vectors and/or human contacts with the reservoir or vector. It is not possible to forecast in advance which zoonotic pathogen will cause the next epidemic or pandemic, but we can be prepared. The cornerstones of preparedness are global monitoring of microbes in animals and in humans, development of vaccines and antimicrobials, maintenance of good diagnostic readiness, capability to work with pathogenic microbes, and a functioning network of researchers, clinicians and veterinarians.