

Zoonotic Risk Prediction and Prevention of Next pandemic Infections

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Most pandemics such as HIV/AIDS, severe acute respiratory syndrome, pandemic influenza—originate in animals, are caused by viruses, and are driven to emerge by ecological, behavioural, or socioeconomic changes. Despite their substantial effects on global public health and growing understanding of the process by which they emerge, no pandemic has been predicted before infecting human beings. Currently, the world is engulfed in combating a pandemic with its control dependent upon the acquisition of immunity by individuals and population groups against the causative virus. There still are millions of zoonotic diseases in the world on standby. In the present study current pandemics are analyzed and devised a pattern existing between the previous pandemics caused by existing or novel, bacterial or viral pathogens and to verify the existing estimate frequency with which occurrence of pandemics holds true. To acquire a quality level of preparedness against the next global pandemic the first step is to identify global level determinants, which gives an insight towards the likeliness of pandemic emergence through ecological processes. New mathematical modelling, diagnostic, communications, and informatics technologies can identify and report hitherto unknown microbes in other species, and thus new risk assessment approaches are needed to identify microbes most likely to cause human disease. In the current study a series of research and surveillance opportunities and goals are laid that could help to overcome the challenges of pandemics and move the global pandemic strategy from response to pre-emption.

Keywords: Pandemics; Zoonotic diseases; Determinants; Mathematical modelling; Microbes

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