

Do the Bacterial Pathogens of Animal Origin Pose a Serious Challenge to Public Health?

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Bacteria are microscopic, single celled, living prokaryotic microorganisms that can cause infections in both humans and in animals [1]. There are many bacterial animal pathogens, such as *Aeromonas hydrophila*, *Bacillus anthracis*, *Bartonella henselae*, *Brucella abortus*, *B. canis*, *B. melitensis*, *B. suis*, *Borrelia burgdorferi*, *Burkholderia mallei*, *B. pseudomallei*, *Campylobacter jejuni*, *Clostridium tetani*, *Erysipelothrix insidiosa*, *Escherichia coli*, *Francisella tularensis*, *Fusobacterium necrophorum*, *Leptospira* species, *Listeria monocytogenes*, *Mycobacterium avium* subspecies *paratuberculosis*, *Mycobacterium bovis*, *Pasteurella multocida*, *P. pestis*, *Pseudomonas aeruginosa*, *Rhodococcus equi*, *Salmonella* species, *Spirillum minus*, *Streptobacillus moniliformis*, *Streptococcus suis*, *Vibrio parahaemolyticus*, *Yersinia enterocolitica*, *Y. pseudotuberculosis* etc. that have the potential to produce the disease in the susceptible individuals globally [1-6]. Some of the bacterial pathogens cause life-threatening infections in humans [1,3]. The infections caused by the animal pathogens have been reported in immunocompromised as well as in immunocompetent subjects [1].

An organism of animal origin that cause disease in human beings is known as zoonotic pathogen [1]. These pathogens can be transmitted to humans through several modes like direct contact, ingestion, inhalation, bite of an animal, blood transfusion, traumatic injury to the skin, and arthropod vector bites [1,3,4,7]. In this context, it is important to mention that healthy as well as sick animals have the potential to spread the zoonotic pathogens to human beings [1].

Presently, there are more than 300 zoonotic diseases of diverse aetiologies that affect both sexes, all age groups, and are reported to occur in all seasons, in urban and rural settings, and in developing as well as developed nations of the world [1,8]. Zoonotic infections are important from public health and economic point of view. Anthrax and brucellosis are two major bacterial zoonoses that cause infections in about 100,000 and 500,000 people, respectively every year in the world [1]. In India, economic losses due to plague was estimated as US Dollar 2.0 billion. Similarly, anthrax resulted a financial loss to the tune of US Dollar 250.0 billion in the USA [9]. These diseases can occur in sporadic and epidemic form resulting into high morbidity and mortality [1,5,6]. The clinical manifestations of these infections are varied. Therefore, laboratory help by employing microbiological, immunological, and molecular techniques is highly imperative to establish an unequivocal diagnosis of zoonotic infections [1,10].

It is pertinent to important to mention that health education of the people about the source of infection, mode of transmission, severity of disease and personal hygiene play a vital role in the prevention and control of most of the communicable diseases including the zoonotic infections in the community. In addition, the early diagnosis and prompt treatment is highly essential to mitigate the morbidity and mortality of the affected person [1].

It is important to mention that over 60% of infections of humans derived from a variety of animals [9]. Therefore, it is imperative that infections in animals must be controlled to protect the health of human beings throughout the world. Furthermore, it is emphasized that veterinarians must be appointed in all the public health programmes at local, national and international level to achieve the objective of One Health to all.

Considering the life-threatening implications of emerging zoonoses, it is prudent to have a continued surveillance of these diseases so that appropriate strategies for their control can be framed to safeguard the public. Moreover, there is a need to create more awareness about the zoonotic diseases among the medical professionals so that they can diagnose and treat to prevent the suffering of the patients.

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