

## Emerging and Re-Emerging Infectious Diseases: Public Health Perspective

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### DEAR EDITOR,

There have been threats of new diseases emerging due to the evolution/adaptation of microbes and the re-emergence of old diseases due to the development of antimicrobial resistance.<sup>[1]</sup> Many factors have contributed to the emergence of infectious disease such as unplanned and under-planned urbanization; increased exposure of humans to disease vectors/reservoirs; rapid population growth; inadequate public health infrastructure and irrational antibiotics usage.<sup>[2,3]</sup> The impact of the emerging and re-emerging diseases has been enormous at socio-economic and public health levels and it presents a great challenge for the future.<sup>[3]</sup> Their control requires continuing surveillance, research and training, better diagnostic facilities and remodeled, and well-equipped public health system.

There has been an extensive progress in the prevention, control and even elimination of some infectious diseases with improved hygiene and sanitation practices along with the development of antimicrobials and vaccines.<sup>[1]</sup> However, they still remain a major public health concern, especially in the developing world, in view of the associated high morbidity and

mortality. Moreover, there have been threats of new diseases emerging due to the evolution/adaptation of microbes and the re-emergence of old diseases due to the development of antimicrobial resistance.<sup>[1]</sup> Emerging or re-emerging infectious diseases are those diseases whose incidence has increased in a defined time period and location. If the disease was unknown in a location before, the disease is considered to be emerging. However, if the disease had been present at the location in the past and was considered eradicated or controlled, the disease is considered to be re-emerging.<sup>[4]</sup> Identification of an emerging disease can occur because of disease showing its presence in population for the first time;<sup>[4]</sup> or being detected for the first time; or the link between an infectious agent and a chronic disease or a syndrome has recently been established.<sup>[2]</sup> Multiple hypothesis such as human activity; seasonal variability in human immune system function; seasonal variations in vitamin D levels; seasonality of melatonin; and pathogen infectivity have been proposed that can influence the seasonal patterns of infectious diseases.<sup>[5]</sup>

One of the goals of infectious disease

management is the development and production of countermeasures for reducing the magnitude of the problem. Although emergence and re-emergence of infectious disease is a significant public health priority, countermeasures in response to emerging pathogens were inadequate and variable among state health departments.<sup>[6]</sup> As the epidemiological determinants for most of the infectious diseases are well-known, comprehensive plans and policies for intervention strategies can be developed, encompassing surveillance and response (early detection, prompt investigation and monitoring emerging pathogens, the diseases they cause and the factors influencing their emergence); prevention and control measures (enhancing communication of public health information about emerging diseases and ensuring prompt implementation of prevention strategies); infrastructure (strengthening of public health infrastructure to support surveillance and implementing prevention and control programs); applied research (integrating laboratory science and epidemiology to optimize public health practice and promotion of communication of research findings for the masses);<sup>[7-9]</sup> development of newer vaccines against emerging diseases; efficient implementation of international health regulations; frame-work for promoting international cooperation and involvement of all stakeholders; and rational use of antimicrobials to prevent emergence of drug resistance.<sup>[2,10]</sup>

The impact of the emerging and re-emerging diseases has been enormous at socioeconomic and public health levels and it presents a great challenge for the future. Their control requires continuing surveillance, research and training, better diagnostic facilities and remodeled & well-equipped public health system.

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