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Emerging and Re-emerging Diseases: Policies and Strategies for Future

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ABSTRACT

The emerging infectious diseases and their number one causes pose a challenge to international stability worldwide. The epidemic of emerging and re-emerging diseases causes many problems for health systems, especially for the medical staff, which require global action in this regard. Emerging infectious diseases are a growing problem for the global community that accompanies the increasing danger of severe health, environmental, economic, and social impacts. An ideal emerging disease preparedness and response environment would strive for collaboration among all sectors impacted by the area unit as a business and social commitment to enhance the capacity of nations and communities to respond to threats as they arise. This article highlights the significant issues that should be considered in emerging and re-emerging diseases, which could help the policymakers to set effective policies for dealing with the diseases and to evaluate the impact of previous health interventions better at the community level.

Key words: Emerging diseases, Re-emerging diseases, Health policy, Strategies, Future

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Introduction

Newly discovered, and antecedent unknown, infectious agents area unit rising infectious diseases that cause native or international public health issues. Re-emerging infectious diseases identified before has plummeted to such low rates that they are no longer considered to be the issues of public health. However, they are showing upward increases in incidence or prevalence worldwide or have emerged in places where they have not been observed before (1). Factors for emerging infectious disease (EID) are dynamic and interrelated (2). Factors, which often differ for EID, include genetic, biological, social, political, and economic factors. Increased world population, ageing, tourism, urbanization, global climate change, human dynamics and behavior, economic growth and land use, technology and industry, deterioration of public health policies, deprivation and social inequality, war and famine, lack of political ability and hence the aim to harm area unit among the factors supporting the emergence, evolution (3).

In 2016, nearly 10 million people died from infectious diseases, representing one-fifth of all deaths worldwide (4). Every year, almost 30 percent of 1.49 billion Disability-Adjusted Life Year (DALYs) is lost to infectious diseases. Disability caused by infectious diseases also has a significant public health effect. For example, while trachoma and onchocerciasis are not fatal, they may lead to vision loss, which is an essential burden of disease affecting the quality of life and contributes to economic loss (5). The burden of morbidity and mortality from infectious disease falls most heavily on people in developed countries, and especially on infants and children (6). Therefore, by definition, Lyme disease, tuberculosis (TB), West Nile virus, Nipah virus, HIV, and microbial antibiotic- infections are all among emerging infections. The global fatality rate of 17 million deaths per year is believed to be caused by the widespread of highly infectious diseases (7). During the 1960s, human coronaviruses (HCoVs) were first described in patients with the common cold.

Since then, more HCoVs have been reported, including those that cause severe acute respiratory syndrome (SARS), Middle East Respiratory Syndrome (MERS), and two viruses that may cause serious respiratory disease in infected humans (8). The first severe infectious diseases emerged in the 21st century, as in the case of SARS. SARS, a new coronary virus, which originated in China in 2003, spread quickly to 30 countries across Asia, the Americas and Europe, with a total of 8,439 cases and 812 deaths within 7 to 8 months. It posed a major challenge to global health security, health-care specialist employees, and economic stability and growth. In Asian countries, financial losses have been estimated at UD$ 10-30 billion (9).

Last Epidemic

Recently, in Wuhan, China, the Chinese authorities detected a cluster of new coronavirus (SARS-CoV-2) infections, which is a new and unknown type of virus in humans. The COVID-19 epidemic initially spread quickly throughout China, but infected more than 190 countries across the world. Globally, the number of coronavirus cases has passed 805,377 people, with 39,469 deaths till now. (Update: 2020/31/3)

Challenges of emerging and re-emerging diseases

The WHO announced an Public Health Emergency of International Concern (PHEIC) on January 30th, in 2020. The urgent management approaches against 2019-nCoV are preventing transmission, isolation, respiratory, eye safety, and hand hygiene, depending on the current status (10). New pathogens and antimicrobial types of older pathogens continue to evolve, some of which, with the potential to spread rapidly and internationally, with high morbidity and mortality rate (2). Considering the public health, emerging infections remain a challenge in global and national levels. Epidemics or pandemics caused by these emerging and re-emerging diseases frequently take a heavy toll of life and cause significant

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anxiety and fear as they spread rapidly across borders.

Responsive rapid response systems at various levels of health service are the foundation of identifying risks to public health and responding rapidly enough to protect precious human lives. To address the challenge of emerging and re-emerging pathogens, global and national commitment and systematic strategies are needed at all levels of health care services (11). In addition to health, emerging infections are also considered as severe economic, developmental, and security challenges. A comprehensive national policy on infectious diseases should be applied to tackle the challenges of emerging and re-emerging infections getting through all related governmental as well as non-governmental industries.

Regional efforts to plan and control dengue fever and other Arboviral infections encountered major challenges such as inadequate vector surveillance capacities, limited multidisciplinary and inter-sectoral cooperation, lack of integrated vector management strategies, and low awareness of these infections (12). Other issues include knowledge gaps on risk factors for emerging disease transmission, poor and inconsistent early detection and response surveillance systems, limited laboratory testing capabilities, insufficient expenditure in disease monitoring and response programs, and lack of formal preparedness and response plans (13). One of the significant challenges in emerging and re-emerging diseases is the issue of protecting health care providers because, in epidemics, health care providers are more likely to get infected (14). The World Health Organization (WHO) has released guidelines for protection in various situations. However, the extent of their success is not clear.

Strategies for emerging and re-emerging diseases

In 2000, WHO and its partners developed the Global Outbreak Alert and Response Network (GOARN) to ensure that countries have rapid access to the most relevant tools and expertise for identifying, evaluating, and responding to emergencies of international significant public health. WHO Health Emergencies (WHE) Program's mission is to develop member states' capacity to handle emergency health threats when national resources are overwhelmed, lead and coordinate the international health response to monitor outbreaks, and provide effective relief and recovery for affected populations (7) The safety of healthcare workers during outbreaks is essential, especially in the initial stages, when limited information about the transmission and infection potency of the virus is available (15). Since the world is increasingly linked, emerging diseases pose a more significant threat and require local, national, and global coordination. The lessons learned from these outbreaks of disease illustrate the need to move towards a more comprehensive, holistic, and constructive approach. In these cases, disease risks are frequently compounded by vulnerable public health networks and weak or fractured capacities for monitoring and identifying the risks (16). Commitment to technology transfer and global cooperation is necessary to keep up with emerging infectious diseases when agility is required. Pathogen surveillance and exploration will promote global cooperation through partnerships on matters that occur beyond national or political borders and represent common objectives (17). Social distancing has been effective in curbing the human-to - human spread and reducing morbidity and mortality in past disease epidemics. A single policy of social distancing may minimize the spread of epidemics, but several policies like that, such as more stringent steps such as isolation and quarantine, are typically enforced in conjunction to be more effective (18). For instance, the combination of social distancing and disease control policies during the extended Chinese Lunar New Year holiday has prevented new infections in the case of COVID-19 which happened in China (19).

To prevent the next epidemic and pandemic, research and investment in three areas were suggested; wildlife surveillance to identify the high-consequence pathogens they carry, wildlife

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touch surveillance to detect early spillover events, and enhancement of wildlife industry's biosecurity. Global cooperation and collaboration will be critical if disease transmission needs to be controlled (20). Since the epidemiological determinants for most infectious diseases are well understood, detailed strategic intervention plans and policies can be established including surveillance and response, prevention and control measures, infrastructure, applied research, production of new vaccines against emerging diseases, successful implementation of international health regulations, having a framework for promoting international collaboration and participation of all stakeholders, and fair use of antimicrobials to prevent drug resistance from developing (21).

Conclusion

Strengthening the monitoring and timely reporting systems will prompt responses to the opportunity and enhance health infrastructure at all levels of health care driven by trained, qualified, and committed workforce who are required as a countermeasure to combat this threat. Social media engagement should be of paramount importance for raising information and engaging people in reducing fear in particular. It is clear that the EID issue is not limited to a single country, and effective and sustained international cooperation is required in the prevention and control of the diseases.

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Not applicable

Conflict of interests

The authors declared that they have no conflict of interests.

Authors' contributions

Khodayari-Zarnaq R and Alizadeh G designed research; Alizadeh G compiled the research reports and wrote manuscript; Alizadeh G had primary responsibility for final content. All authors read and approved the final manuscript.

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