A GLOBAL PERSPECTIVE ON RECENT EPIDEMICS: ARE THERE LESSONS FOR THE CARIBBEAN REGION IN THE COMING DECADE?

An analysis of the recent epidemics of West Nile encephalitis, foot-and-mouth disease, avian influenza, canine influenza, classical swine fever, and bluetongue

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ABSTRACT

This paper reviews the changing global landscape of infectious diseases and outlines the history and epidemiology of selected recent epidemics that have relevance to human and animal health in the Caribbean area; specifically, West Nile encephalitis, bovine spongiform encephalopathy, foot-and-mouth disease, avian and canine influenza, classical swine fever, and bluetongue. While it is not possible to predict which new diseases will emerge over the next 10 years to affect the Caribbean countries, one can identify trends. It is safe to say that new diseases will emerge. The region has an excellent record of disease prevention and eradication, but this should not be a justification for celebration and relaxation. Various factors continue to place the Caribbean at risk, ranging from the increased volume of trade and tourism in the region through to global warming. Diseases originating elsewhere in the world could easily involve the region.

INTRODUCTION

Over the last decade, concerns that pandemics could sweep the globe have at times almost reached panic/despair due to a spate of emerging disease problems affecting human and domestic animals. In this paper, I will describe the changing global landscape of infectious diseases and, outline the history and epidemiology of selected recent epidemics. Within this context, I will also comment on the resulting impact on societal behavior with regard to the control of disease and the extent to which the media can affect public confidence in the ability of international agencies and governments to protect society. Using this historical perspective, I will identify some of the lessons learned and conclude by discussing ways in which the Caribbean can reduce the risk of new diseases affecting its citizens and animals.

THE CHANGING LANDSCAPE OF INFECTIOUS DISEASE AT THE BEGINNING OF THE 21ST CENTURY

Emerging diseases caused by viruses lead the charge of those that have recently shown their global reach (Table 1). It is estimated that the rash of emerging or re-emerging livestock disease outbreaks around the world since the mid 1990s, including bovine spongiform encephalopathy, foot-and-mouth disease, and avian influenza, has cost the world’s economies > $80 billion (Karesh and others 2005).

Driving Forces Promoting the Increased Numbers of Epidemics in Recent Years

There are myriad interconnected factors that influence the increase in the rate at which diseases have emerged in recent years, among them:

- Extensive global trading and tourism patterns of the late 20th Century (pathogens as hitchhikers);
- Speed of mass transportation (less than the incubation time of disease, hence infected people can travel internationally undetected);
- Exposure to new pathogens through ecosystem disruption (human population pressures; exposure to wildlife);
- Intensification and monoculture farming (viral amplification);
- Technical sophistication in food processing masking true origins (individuals cannot exercise innate protective responses);
- Evolutionary pressures through overpopulation and change in tropism (intensive agriculture).

Most (probably all) animal and insect species are infected with several different potential pathogens. There is little doubt that the number of viruses waiting to be discovered is enormous. It is safe to conclude that some of these undiscovered infectious agents will have epidemic and possibly zoonotic potential. With so many viruses arguably still waiting to be discovered, defining the probability that a specific disease will emerge is impossible, but it is unquestioned that international trade and tourism provide rapid dissemination of emerging infectious diseases from the initial focus. Whereas in previous centuries a disease focus may have died out