

## A Brief Note on Emerging Infectious Diseases

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### DESCRIPTION

Great strides have been and are being made in the prevention and control of infectious diseases. The eradication of smallpox demonstrated that the world had hope against historic scourges. The lessons from the eradication of smallpox have inspired and informed the near eradication of poliomyelitis and dracunculiasis, events that the world hopes to celebrate within the first decade of the 21<sup>st</sup> century. Oral rehydration salts have led to the diminution of mortality from infant diarrhea at modest global cost. From these successes, a popular misconception emerged among health professionals and policy makers in industrialized nations that infectious diseases had been largely conquered and chronic diseases were the principal new frontier. Of course, this was untrue unless one took a highly ethnocentric point of view, ignored the developing world and was naively optimistic that no new pathogens would emerge and reemerge.

Indeed, strides continue to be made in the prevention and control of infectious diseases. The first vaccine shown to be effective in the prevention of human papillomavirus strains linked to genital warts has recently been approved for use in the United States; a new rotavirus vaccine is now available and progress has been reported in the development of vaccine against Ebola and Marburg viruses. However, during this same time period, the first pandemic of the 21<sup>st</sup> century occurred when more than millions of cases from severe acute respiratory syndrome were reported in almost all the countries. Subsequently, the SARS coronavirus remains quiescent, but there are continuing fears of another pandemic from influenza type A spurred by the emergence of H5N1 avian influenza in Asia. This time period also saw the emergence of the first inhalational anthrax cases in the United States from an

international act of bioterrorism that remains of mysterious origin 5 years later.

Many infectious diseases continue to emerge as international threats. The prevalence rates of tuberculosis and malaria resistance, both major killers are increasing and the treatment of these diseases has become more difficult with the emergence of drug-resistant strains. In 2005 the global distribution of dengue viruses became comparable to malaria, with 2.5 billion people living in areas at risk for epidemic transmission. The prevalence of HIV continues to increase worldwide. Duration of survival among those infected with HIV has increased substantially in the last 10 years with the advent of new treatments.

The interaction between humans and the environment is a dynamic process both in their behaviors with each other and in their interactions with the environment. How we interact socially, sexually, politically and economically can often be linked to migrant labor and urbanization which are related in turn to the influences of technology and population growth. Of course, diseases can emerge from nature without human influences. Population pressures in a world with over 7 billion inhabitants contribute dramatically to infectious diseases. Redistribution of rural populations to urban environments, especially in the developing world, increases crowding and person-to-person contact. Overcrowding, poverty, poor hygiene and sanitation and unsafe water typically accompany urbanizations due to the emergence of unplanned living quarters. Close quarters may increase tuberculosis and other diseases that exploit increased host susceptibility, especially among the very young, the elderly or persons who are immunocompromised. The redistribution of human populations exposes susceptible individuals to infectious diseases that may be more endemic in their new environment.

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