EDITORIAL

Emerging Infectious Diseases: The Link Between Environment and Human Health

The spread of the SARS (severe acute respiratory syndrome) virus that caused outbreaks at numerous locations worldwide and the annual need for influenza monitoring and vaccination programs illustrates the intimate link between environment and human health. For example, if animals such as poultry, pigs, and cattle are properly maintained in isolated facilities and the wastes arising from animal production is properly disposed of, there is less opportunity for viral and bacterial pathogens to undergo gene transfer and genetic recombination or to mutate and then new emerging infectious agents to come into contact with humans. Moreover, people working in this type of agriculture must know and follow proper personal health procedures to reduce the fecal-oral route of contamination. The need for proper management in agricultural animal facilities, waste disposal, training and personal hygiene are absolutely essential to prevent the emergence and spread of viral diseases on a global scale.

Once a new infectious disease is transmitted into only one human, the probability of continued transmission to other people is possible in the early stages of the emerging disease. In some cases, the disease may not be reported to health officials, the disease is unknown as it has never been previously reported, the disease is misdiagnosed, the origin of the disease is unknown and there may be no known treatment for the new disease. If these problems are combined with the global movement of people, the disease may be easily disseminated on a global scale in a matter of days, weeks to months.

Many infectious diseases can be prevented, reduced and eliminated with the use of proper water disinfection, proper sewage and waste treatment, proper handling of agricultural animals and crops, personal hygiene and in some cases immunization programs. However, this still is not enough. To carry out these activities, countries need to implement proper education, training, research and disease surveillance/enforcement capabilities. I do not have the statistics on these latter points, but I suspect there are many places in the world where these programs simply do not exist or will likely exist in the near future. The absence of these programs and infrastructure means the probability of new emerging infectious agents is highly possible. In addition, the billions of people on the Earth, especially in densely populated communities, cities and countries virtually guarantees that an infectious disease will be quickly transmitted by direct contact and in some cases as aerosols and in water and food supplies. The emergence of a new disease like SARS and other possible diseases in the future demonstrates the link between

how humans interact with their environment and the impact it has on human health. An immense challenge confronts the human population on the Earth. It is the prevention of infectious diseases by the proper management of our common environment. This will require an immense amount of international collaboration, time, money, training, research, data bases, infrastructure and the will to do it properly.

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