



# Emerging Infectious Diseases: A Persistent Threat to the Community

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Infections that have recently surfaced in populations whose incidence is expanding quickly or poses as a potential threat to do so in the near future are considered emerging infectious diseases. Infectious agents that were previously unknown or unidentified may be the source of emerging illnesses. Globally, infectious illnesses pose a serious threat to both public health and the stability of economies. They have been among the top causes of death and disability for ages, posing increasing risks to human advancement and health security. The ongoing reappearance of old, neglected, and infectious disease epidemics with worldwide implications adds to the threat posed by infectious illnesses. At least thirty novel human-pathogenic infectious pathogens have evolved in the last 35 years; the majority of them being zoonotic, and research has indicated a strong correlation between the origins of these organisms and ecological, environmental, and socioeconomic factors.

**KEYWORDS:** Zoonotic, Vector Borne Diseases, Infections

## INTRODUCTION

The National Institute of Allergy and Infectious illnesses defines emerging infectious illnesses as generally understood to include: Surge in previously undiagnosed illnesses Illnesses that have been identified in the past 20 years and whose incidence or geographic range is quickly rising.<sup>1,2</sup> The enduring presence of infectious illnesses that are uncontrollable. such as dengue fever, SARS, E. Coli, HIV infections, and Hantavirus, among others. Authors from all over the world submit more than 2000 publications to Emerging Infectious Disease annually. It accepts about 25% of the items that are submitted.<sup>3</sup>

### Among the following are emerging infectious diseases:

Outbreaks of recently discovered illnesses, Known illnesses that are now rapidly expanding in terms of cases or the number of affected areas, recognized viral illnesses that are uncontrollable and chronic, Among the newly discovered illnesses are: Coronavirus illnesses, such MERS, SARS, and COVID-19, HIV-related cases, Lyme illness, E. Coli, or Escherichia coli, Hantavirus, Dengue fever, etc.

### Re-emerging diseases: what are they?

Reemerging diseases are those that resurface following a prolonged period of decrease. Re-emergence of once-under-control diseases is caused by a collapse in public health procedures. These may also occur as a result of the emergence of novel strains of recognized pathogens.<sup>4</sup>

The main factor influencing re-emergence is human behaviour. For instance, the abuse of antibiotics can lead to the emergence of drug-resistant disease-causing microbes. It has made diseases that were once curable and under control more likely to recur.

Malaria, TB, cholera, influenza, pneumococcal disease, and gonorrhoea are among other reemerging illnesses.<sup>5</sup>

### Factors Affecting the Development or Recurrence of Contagious Diseases:

The resurgence of "old" infectious illnesses or the creation of new ones are caused by a variety of circumstances. Many are the consequence of human behaviour and behaviours, but some are the outcome of natural processes, such as the evolution of pathogens over time.

It is common knowledge that there has been a shift in the way humans interact with their surroundings, particularly in the past century. Population expansion, rural-to-urban movement, international air travel, poverty, war, and damaging ecological changes brought on by land use and economic development are some of the factors that have contributed to these shifts.<sup>6</sup>

### At least two things must happen for an emerging illness to spread:

The infectious agent must be introduced into a population that is susceptible, and the agent must be



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**Submitted on:** 03-Jan-2024; **Accepted on:** 15-Mar-2024

able to transfer quickly from one individual to another and inflict illness. Additionally, the virus needs to be able to spread throughout the population, meaning that an increasing number of people must contract it. Numerous newly discovered illnesses result from animal-to-human transmission of infectious pathogens, or "zoonoses." There is a greater chance that people will come into close contact with animal species that could serve as hosts for an infectious agent as the human population grows and spreads into new geographic areas.

It is simple to understand how this poses a major threat to human health when one considers the combination of that component with rising human density and mobility.<sup>7</sup>

Global concern over the role of climate change in the spread of infectious illnesses is growing. Diseases have the ability to spread to new geographical areas as a result of habitat changes and climate change. For instance, rising temperatures enable mosquitoes to spread their range into previously uninhabitable areas, thus spreading diseases they carry.

Antimicrobial resistance, or the microorganisms' developed resistance to antimicrobial drugs like antibiotics, is a phenomenon that plays a particularly significant role in the resurgence of diseases. Over time, viruses, bacteria, and other microorganisms can adapt and become resistant to the medications used to treat their ailments. As a result, medications that once worked to control illness are no longer helpful.<sup>8</sup>

A decrease in vaccination rates can also lead to a disease's resurgence because, in situations where a vaccine is both safe and effective, more people are opting not to get vaccinated. This has been a specific issue with the vaccination for measles. Measles is a highly contagious and serious infection that was eradicated in the Western Hemisphere in 2016 and the United States in 2000. However, it has resurfaced in some areas as a result of a rise in the number of people choosing to receive non-medical vaccination exemptions for religious and/or personal beliefs. This has been fueled by an anti-vaccine movement that primarily drew support from a debunked and questionable studies that suggested a connection between autism and the measles vaccine. Measles cases are at an all-time high this decade due to the drop in vaccine coverage; in the first half of 2019, there were over 1,000 cases of measles recorded in the nation's capital.<sup>9</sup>

### **What chance do infectious diseases have of spreading?**

A person may be susceptible to infectious infections that are uncommon in a country when you travel abroad. Travelers are particularly more vulnerable if they get sick in a nation where access to care for these illnesses may be restricted. Everyone making travel plans ought to educate themselves on the possible risks associated with the nations they will be visiting. And take proper measures to lessen their vulnerability to these illnesses.

### **Examples of the Emergence of Diseases:**

One example of an emergent disease caused by a combination of human and natural forces is influenza, also known as the flu. The potential of the influenza virus to alter its genetic makeup is well-known.<sup>10</sup>

Significant alterations in the influenza virus can result in pandemics as the human immune system is ill-equipped to identify and combat this novel variation. Living close to farm animals like pigs, chickens, and ducks increases the likelihood that significant genetic alterations may occur and be passed on to humans. These animals can serve as mixing vessels to produce previously undiscovered strains of influenza as they are the virus's natural hosts. Although the H5N1 virus is extremely lethal—more than half of cases have resulted in death—it is not able to spread well among humans. On the other hand, the 2009 H1N1 influenza, which was spread by pigs and became human, spread swiftly and readily from person to person due to human activity, especially air travel. Luckily, it proved to be significantly less lethal than the H5N1 virus. A major hazard to human health would be the emergence of an influenza virus that is just as deadly as the avian H5N1 virus and spreads among humans just as readily as the swine H1N1 virus.

As examples of how viruses can spread from animals into humans, learn to spread from person to person, and then quickly spread around the world due to air travel, consider the coronaviruses SARS-CoV, MERS CoV, and SARS2, which cause the diseases SARS, MERS, and COVID-19, respectively.<sup>11</sup>

**HIV Propagated** - HIV is one infection that is on the rise and is related to human behavior. Humans are believed to have contracted HIV from chimpanzees in remote areas of Africa when they came into close contact with them, possibly while bushmeat hunting. Via air travel, HIV most likely moved from rural to urban areas and eventually worldwide.

HIV spread quickly and widely because of additional behavioral factors, including the transfer of blood products prior to the diagnosis, sexual transmission, and intravenous drug use. Investigating New Illnesses.<sup>12</sup>

### Removing and Immunization:

The amazing elimination of smallpox and the development of vaccinations and antimicrobial medications had raised hopes that infectious illnesses could be curbed or even wiped out. The difficulties that still lie ahead for infectious disease research are highlighted by the contemporary realization that infectious illnesses might reappear and continue to spread, including the potential for bioterrorism.<sup>13</sup>

### CONCLUSION

The majority of newly developing infectious illnesses, including severe acute respiratory syndrome and mosquito borne disease, originate from zoonotic reservoirs and are often spread by arthropod vectors. Ticks have emerged as a common arthropod vector of emerging zoonotic diseases, such as ehrlichiosis, anaplasmosis, and Lyme disease, due to their prevalence as insect vectors of zoonotic diseases. Because they may carry diseases for generations without having to re-infect host reservoirs, ticks of all sexes and all ages are extremely skilled and adaptable vectors of infectious diseases. Human behavior and recent environmental changes have resulted in prolonged outdoor periods where humans and ticks coexist in environments that are conducive to reproduction, blood feeding, and the spread of infectious diseases.<sup>14</sup>

Prior to the highly conserved genomes of tick-transmitted microorganisms reassigning their nucleic acids with their hosts and developing antimicrobial resistance (particularly to tetracyclines) or superpathogen capabilities, either by nature's design or human terrorist intent, better prevention and treatment strategies are indicated for tick-borne diseases.<sup>15</sup>

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**Cite this article as:**

Rai R, Sharma A, Negi S. Emerging Infectious Diseases: A Persistent Threat to the Community. Int Healthc Res J. 2024;7(12):RV17-RV20. <https://doi.org/10.26440/IHRJ/0712.03626>

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**Source of support:** Nil, **Conflict of interest:** None declared

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