

Epidemiology of Human Immunodeficiency Virus in the United States

Jennifer L. Shugart

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Thirty-two million people have died from AIDS-related infections since the beginning of the Human Immunodeficiency Virus (HIV) epidemic (U.S. Department of Health and Human Services (HHS), 2019). Although having HIV used to be considered a death sentence, great strides in research, prevention, and new treatment options create the promise of a normal-length lifespan for most people living with HIV today. This paper will define HIV and explain how it affects communities, how the social determinants of health (SDOH) contribute to the development of HIV, the epidemiologic triangle, the role of the community health nurse and importance of accurate demographic data, and the global implications of HIV in communities.

### **Communicable Disease: HIV**

According to Global HIV and AIDS statistics, "Human Immunodeficiency Virus (HIV), first identified in 1981, is a virus that attacks cells that help the body fight infection, making a person more vulnerable to other infections and diseases" (HHS, 2019). This sometimes deadly virus spreads by coming into contact with a person's HIV-infected bodily fluids, usually through unsafe sex, or by way of shared drug needles. Moreover, a mother can infect her child during pregnancy, childbirth, and while breastfeeding. There is currently no cure for HIV, and once a person gets the disease, they have it their entire lifetime. Also, HIV leads to Acquired Immunodeficiency Syndrome (AIDS) if it is left untreated. AIDS can result in permanent damage to the immune system, leaving people vulnerable to opportunistic infections, like pneumonia and wasting syndrome (HHS, 2019).

At the same time, HIV can be controlled using specific medications (antiretroviral therapy) to keep the virus from multiplying and to prevent transmitting the disease to others.

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Additionally, medical researchers have created pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) to help combat growing rates of HIV in the U.S. and abroad (HHS, 2019).

Many people often wonder about the symptoms of HIV infection. Symptoms usually occur two to four weeks after first becoming infected. Also, symptoms vary from person to person, and some people will feel like they have the flu (sore throat, fever, muscle aches, and fatigue). Conversely, some people do not have any symptoms at the beginning of HIV. People can live a long life before HIV converts into AIDS. "AIDS is diagnosed when the CDF T-cell count falls below 200, or you have an AIDS-defining complication" (Mayo Clinic, n.d.). Complications to HIV/AIDS can be any of the following: Tuberculosis, Cytomegalovirus, Candidiasis, Cryptococcal Meningitis, Toxoplasmosis, Cryptosporidiosis, certain cancers, wasting syndrome, neurological complications, and kidney disease (Mayo Clinic, n.d.).

Furthermore, demographic information is crucial for identifying a community's needs, finding disparities in its services, and using this data to increase prevention strategies and to force the urgency of specific needs. According to the Centers for Disease Control (CDC), "HIV continues to be unequal regarding certain populations, especially racial and ethnic minorities and gay and bisexual men and other men who have sex with men" (CDC, 2018). The prevalence of HIV at the end of 2016 was approximately 1.1 million people in the U.S., plus an estimated 162,500 (14%) of people who had not yet been diagnosed with HIV (CDC, 2019). The demographic mortality in 2016 for HIV diagnosis-related deaths in the United States were 5,698. Also, morbidity rates for this same year were 39,782. Similarly, the National Institute of Health reports that the incidence of new HIV infections has remained stable since the late 1990s

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(CDC, 2019). Initially, new HIV infections in the 1980s were diagnosed at a rate of 130,000 per year. Then, decreased to approximately 50,000 new cases in the 1990s, and is currently stable at that rate. (CDC, 2019).

Likewise, reporting of HIV disease is a requirement in the United States. "As of October 2003, all states, territories, and cities except Georgia and Philadelphia have implemented a confidential HIV case-reporting system" (CDC, 2003). Additionally, all states currently require medical providers and labs to notify their state or local health department of a diagnosis of HIV within seven days.

### **Social Determinants of Health Contribute to HIV Infection**

The social determinants of health (SDOH) are considered "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" (CDC, SDOH, 2019). There are five main areas of SDOH that can impact a person and the community: economic stability, education, social, and community context, health and health care, and neighborhood and built environment (ODPHP, 2019). The development of HIV can be affected by SDOH. For example, some people are homeless or live in squalor. Being homeless is stressful, plus many people often have others they are taking care of as well, like their children or siblings. Moreover, due to a lack of consistent house, there is no place to store their HIV medications, even if they could get access to them.

In the same way, transportation is an issue for many communities. In some rural communities, there is a lack of HIV providers. Also, many cannot afford to buy an automobile and cannot pay for public transportation. Additionally, there is a stigma associated with HIV. It

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is common for people not to want their families, friends, or neighbors to know that they have been to an HIV clinic to get tested or to receive treatment. These are all factors that can contribute to the development of HIV.

### **Epidemiologic Triangle of HIV**

An epidemiologic triangle is a tool used to help explain how existing diseases reproduce and spread. By way of three essential elements; agent, host, and environment, we can better understand how infectious diseases become epidemics (CDC, 2012). The agent factor is the microorganism (virus, bacteria, parasite, fungus) that causes the infectious disease. For example, HIV is a virus that targets the immune system. Also, it transfers to others through direct contact with an infected person's bodily fluids. In the epidemiologic triangle, the agent infects a host (CDC, 2012). A host is the carrier of a disease. Sometimes a host can carry a disease without showing outward signs of having the disease.

Additionally, hosts are chosen explicitly as their physiology is conducive to the needs of an agent factor (CDC, 2012). For instance, HIV is believed to have been carried initially by chimpanzees. As humans began hunting chimpanzees for food, they became infected by exposure to the primate's blood. The human body was the perfect vehicle, and the perfect temperature to carry and sustain HIV.

In the same way, a community's socioeconomic status can contribute to an increase in HIV infections. Such as an environment plagued by higher than normal numbers of sexually transmitted diseases and living in poor conditions. These factors create the perfect storm for allowing HIV to thrive.

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### **Community Health Nurse and the Importance of Demographic Data**

The role of a community health nurse is to assess and analyze demographic data, using a community's strengths, weaknesses, resources, and external threats (Green, 2018). This process creates higher critical thinking about a community and their surroundings. Next, the nurse chooses achievable goals for the target population, determines resources, and seeks assistance as needed (Green, 2018). Whatever the priority, by setting outcomes and determining a plan of action, the nursing process applies to the broader population and evaluation of results occurs upon completion of the interventions (Green, 2018). Input into statistical programs is necessary to provide systemic support and the use of trends. "Demographic data that reflects an improvement in health and financial situations is important because statistical results support evidence of change, funding opportunities, and persuasion of others" (Green, 2018).

### **Organizations Working to end HIV**

The CDC has a plan to help end the HIV epidemic in the United States by 2030. To explain, the CDC is going to "work closely with the Department of Health and Human Services agencies, local and state governments, communities, and people with HIV to expand key HIV prevention strategies" (CDC, 2019). The primary goal for the CDC and others is to secure funding and then begin focusing first on communities that are experiencing the most cases of HIV, eventually reaching every area of America. (CDC, 2019). Furthermore, the President of the United States has a plan for AIDS Relief (known as PEPFAR) (HHS, 2019). This action is the U.S. Government's counter and is the most significant undertaking by a nation to focus on one specific disease. Likewise, they plan to spend over \$360 million to reach critical populations all over the world.

### **Global Implications**

HIV is still an urgent health issue for certain parts of the globe. As of 2017, there are approximately 36.9 million people worldwide living with HIV/AIDS (HHS, 2019). 1.8 million cases of these were children under 15 years old. Also, most of these children live in Sub-Saharan Africa, which encompasses the most substantial numbers of HIV worldwide and accounts for 66% of all new HIV infections (HHS, 2019). Additionally, most of the children that have HIV contracted the disease from their HIV-positive mothers. Mothers can pass HIV disease to the fetus during pregnancy, by the process of the child being born, or when the mother is breastfeeding her baby. A critical, preventative technique for decreasing the number of mother to baby infections is educating the public and especially women about the available medications that mothers can take while pregnant and during breastfeeding to reduce the risk of HIV transmission.

### **Conclusion**

As has been shown, HIV is one of the deadliest viruses of humanity that ever existed. It has touched every area of the world and affected millions of lives. Significant steps continue in HIV research, care, treatments, and prevention efforts. Along with these advances, people in communities are living longer, better quality, and more productive lives. And, those living in low socioeconomic and isolated areas may soon get the help and resources that every person equally deserves. Moreover, as the role of the community health nurse grows and research and demographic data are distributed to other healthcare professionals, this should allow for more significant funding for HIV research, education, healthcare clinics, transportation, medical

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personnel, and availability of medications. Ultimately, the hope is that HIV will be permanently eradicated, never to cause pain again. What can you do to help prevent future cases of HIV?

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