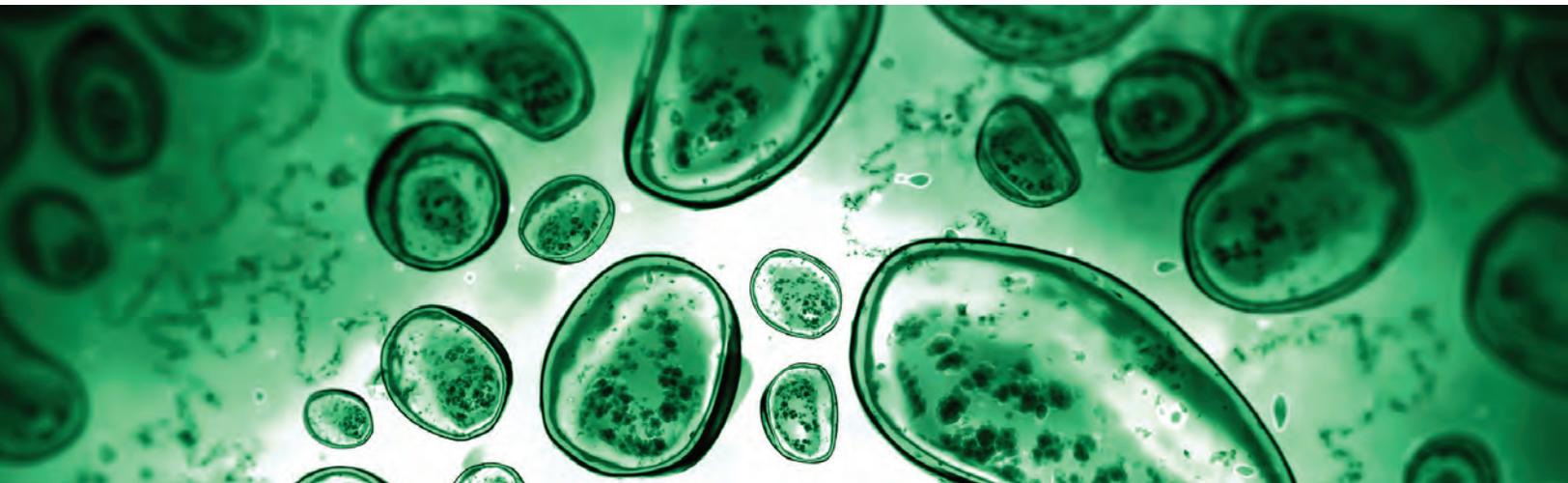


## WHY POPULATION MATTERS TO **INFECTIOUS DISEASES AND HIV/AIDS**



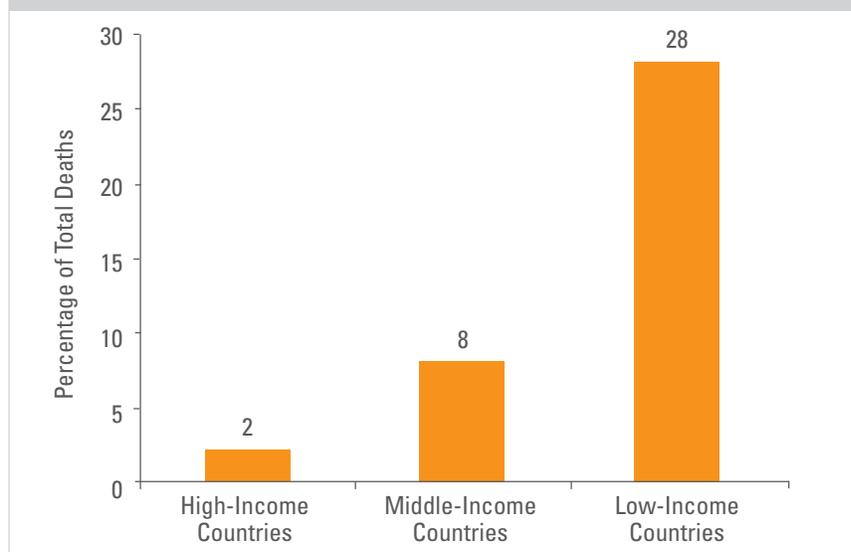
Fertility, migration and urbanization affect the spread of diseases including tuberculosis, malaria and HIV/AIDS. Increased population densities and unhealthy living conditions in urban slums can ease the transmission of infections. Migration may also increase vulnerability to disease.

Infectious diseases such as HIV/AIDS have had a large impact on demographic trends, altering the age structures of heavily affected countries.<sup>1</sup> Access to family planning services has the ability to reduce the spread of disease, especially when integrated with existing HIV prevention programs.

### The State of Infectious Diseases and HIV/AIDS

In 2004, about one-fifth of all global deaths were a result of infectious and parasitic diseases, according to the World Health Organization.<sup>2</sup> Diseases previously controlled through public health measures are also increasing in frequency. These include tuberculosis, malaria, dengue fever and cholera. New diseases have also emerged within the last century, such as HIV/AIDS, Severe Acute Respiratory Syndrome (SARS), Lyme disease and West Nile fever.<sup>3</sup> Developing countries are the most affected. The rate of death from infectious and parasitic diseases is almost 14 times higher in low-income countries than in high-income countries (Figure 1).<sup>4</sup>

**FIGURE 1: Deaths from Infectious and Parasitic Diseases are High in Low-Income Countries**



Source: World Health Organization (WHO). 2008. *The Global Burden of Disease: 2004 Update*. Geneva: WHO.

Changing environmental conditions and human behavior affect the spread and impact of infectious diseases. In 2008, there were an estimated 9.2 million new cases of tuberculosis globally.<sup>5</sup> Poor health conditions (including co-infection with HIV/AIDS) increase the likelihood of developing active tuberculosis, which can then be spread.<sup>6</sup> Migration and interactions with the environment also influence infectious disease emergence and transmission. Diseases passed from wildlife to humans, such as malaria, are a growing threat to human health, and human pathogens originating from wildlife have increased substantially in recent years.<sup>7</sup>

Economic growth and development can contribute to the emergence of new diseases, even as they bring many benefits.<sup>8</sup> Some of the industrialized agricultural farming and food production practices that often accompany development increase the risk of food products becoming contaminated with *E. coli* and *Salmonella*.<sup>9</sup> Farming practices such

as raising poultry in close proximity create conditions that are favorable to outbreaks of avian influenza.<sup>10</sup> Administering antibiotics to livestock and poultry flocks also poses a threat to humans. When humans eat food treated with antibiotics, it can lead to drug-resistant bacteria, rendering some common antibiotics less effective.<sup>11</sup>

Currently, 33 million people are infected with HIV, more than half of whom are women and girls. Nearly 2 million people die each year globally from AIDS-related causes.<sup>12</sup> In the most heavily affected countries, life expectancies have declined by decades.<sup>13</sup> Furthermore, 17 million children, mostly in sub-Saharan Africa, have been orphaned,<sup>14</sup> labor force productivity has weakened, and household incomes have declined.<sup>15</sup>

Sub-Saharan Africa, where more than two-thirds of all people infected with HIV live, is the hardest-hit region. Sub-Saharan Africa's HIV prevalence rate of 5 percent is higher than any other region. The Caribbean, where an estimated 1

percent of the adult population is living with HIV, has the second-highest average prevalence rate.<sup>16</sup>

Women in sub-Saharan Africa are more likely to be infected with HIV than men. In Southern Africa, new infections affect one-third more women than men. Women's vulnerability to HIV is compounded by gender inequalities. For example, lower socioeconomic status and levels of education can increase their likelihood of infection through disempowered sexual relationships and diminished access to health services.<sup>17</sup>

HIV/AIDS' toll is devastating, but there are some positive signs. The global number of new infections each year has declined, and HIV prevalence has declined significantly in dozens of countries. Successful prevention outreach, which has resulted in safer sexual behavior in many settings, has been a critical factor in this development. In sub-Saharan Africa, HIV incidence has generally stabilized or declined.<sup>18</sup>



*Integrating HIV and family planning services can increase access to health care and improve outcomes.*

### Links between Population and Infectious Diseases

Population density and urbanization are two major factors affecting disease spread. People who live in close proximity to one another spread diseases more quickly and easily.<sup>19</sup> Slums around urban areas are extremely vulnerable to infectious diseases due to poor sanitation, high population density and high levels of poverty, all of which increase disease incidence. For example, the increasing number of people living in urban areas around the world will continue to facilitate tuberculosis transmission and weaken attempts to control the disease.<sup>20</sup>

Migration also affects the spread of disease. The probability of encountering new diseases increases

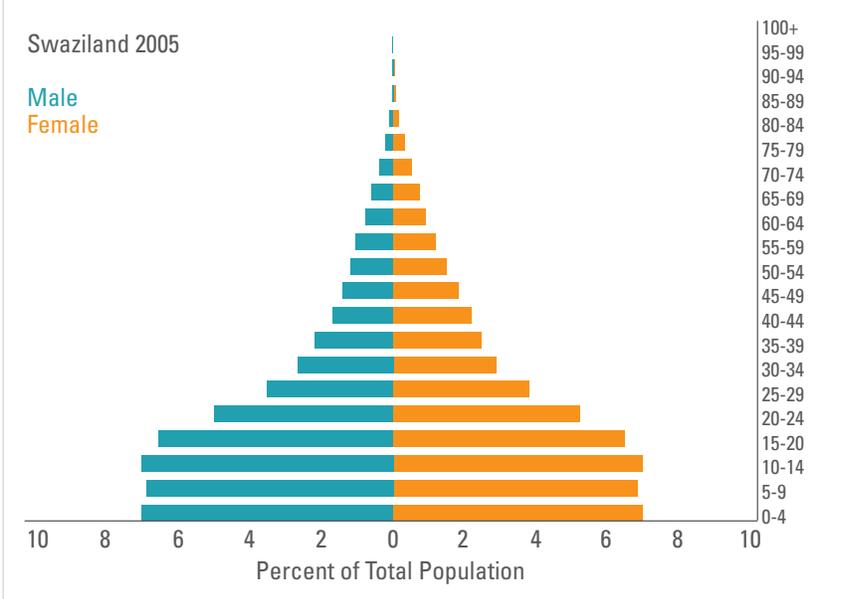
as humans move into previously uninhabited lands because of population growth, or as humans migrate into areas where they do not have resistance to certain diseases. People who move from dry highlands to wet lowlands can become exposed to malaria. Migrants may be particularly vulnerable to malarial infection because of the fatigue and malnutrition that accompany relocation.<sup>21</sup> The risk is highest when migrants move to tropical areas, which are home to a larger number of infectious disease pathogens than areas at higher latitudes.<sup>22</sup>

**Links between Population and HIV/AIDS**

HIV/AIDS has reshaped demographic trends, while population growth has added challenges to addressing the spread of infection. The large number of young people around the world coming into their peak years of sexual activity presents a challenge for HIV/AIDS prevention. More than one-half of the world's population is under age 30, and a quarter is younger than 15.<sup>23</sup> Young people between the ages of 15 and 24 are at a higher risk of HIV infection.<sup>24</sup> There is frequently overlap among countries with youthful populations, high rates of HIV prevalence, and low access to family planning.

Swaziland, for example, is home to 69,000 children orphaned by AIDS,<sup>25</sup> out of a population of 1.2 million. Swaziland has been heavily affected by AIDS-related deaths among working-age adults and fertility remains at an average of four children per woman, leaving an age structure with a large base of economically dependent young people (see Figure 2). Although AIDS increases mortality rates and shortens life expectancies, even in countries with the highest HIV prevalence, the epidemic has not

**FIGURE 2: Swaziland's Age Structure is Shaped by HIV/AIDS**



Source: United Nations Population Division. 2009. *World Population Prospects: The 2008 Revision*. New York: UN Population Division.

reached the scale to create population decline. If Swaziland's fertility rate remains unchanged, its population will increase by 39 percent in the 20 years between 2005 and 2025.<sup>26</sup>

High fertility can also mean a high rate of new HIV infections through mother-to-child transmission. Halting the cycle requires ensuring that women who are living with HIV or are at risk of infection have access to anti-retroviral treatment and to contraceptives to prevent unintended pregnancies.

**Policy Considerations**

Comprehensive prevention policies, programs and services are the most cost-effective ways of reducing the burden of HIV/AIDS and other infectious diseases. One of the primary methods of preventing sexually transmitted HIV is through the use of male and female condoms.<sup>27</sup> Investment in new prevention technologies, especially women-initiated methods like microbicides, is also vital.

Those who seek reproductive health services and those who seek HIV services share many common needs and concerns. Therefore, integrating these services has the potential to increase access to health services and improve health outcomes. Integrated programs that increase women's access to contraceptives result in healthier families and reduced health care expenditures to treat malaria, tuberculosis and other communicable diseases. Beyond access to health care, HIV and infectious disease prevention programs must also address the gender inequalities that increase the likelihood of infection among women.

**Endnotes**

1 United Nations Population Division. 2009. *World Population Prospects: The 2008 Revision*. New York: UN Population Division.

2 World Health Organization (WHO). 2008. *The Global Burden of Disease: 2004 Update*. Geneva: WHO.

3 McMichael, A.J. 2004. "Environmental and Social Influence on Emerging Infectious Diseases: Past, Present and Future." *The Royal Society* 359: 1049-1058.

4 WHO. 2008.

5 World Health Organization (WHO). 2010. *Fact sheet N°104 March 2010 (Tuberculosis)*. Geneva: WHO.

6 World Health Organization (WHO). 2005. *Addressing Poverty in TB Control: Options for National TB Control Programmes*. Geneva: WHO.

7 Jones, K E, N G Patel, MA Levy, A Storeygard, D Balck, J L Gittleman and P Daszak. 2008. "Global Trends in Emerging Infectious Diseases." *Nature* 451(21): 990-994.

8 Jones, Patel, Levy, Storeygard, Balck, Gittleman and Daszak 2008.

9 Weiss, R A and A J McMichael. 2004. "Social and Environmental Risk Factors in the Emergence of Infectious Diseases." *Nature Medicine* 10(12): S70-S76.

10 Weiss and McMichael. 2004.

11 World Health Organization (WHO). 2011. *Antimicrobial Disease: Fact sheet N°194*. WHO. <http://www.who.int/mediacentre/factsheets/fs194/en/>. Accessed 20 January 2011.

12 Joint United Nations Programme on HIV/AIDS (UNAIDS). 2010. *UNAIDS Report on the Global AIDS Epidemic 2010*. Geneva: UNAIDS.

13 United Nations Population Division. 2010. *Population and HIV/AIDS 2010*. New York: UN Population Division.

14 UNAIDS. 2010.

15 Joint United Nations Programme on HIV/AIDS (UNAIDS). 2006. *2006 Report on the Global AIDS Epidemic*. Geneva: UNAIDS.

16 UNAIDS. 2010.

17 Ibid.

18 Ibid.

19 Jones, Patel, Levy, Storeygard, Balck, Gittleman and Daszak 2008.

20 Morens, D M, G K Folkers and A S Fauci. 2004. "The Challenge of Emerging and Re-Emerging Infectious Diseases." *Nature* 430: 242-249.

21 Prothero, R. 1997. "Migration and Malaria." In Carosi, G and F Castelli, eds. *Handbook of Malaria Infection in the Tropics*. Bologna: Organizzazione per la Cooperazione Sanitaria Internazionale.

22 Guerneir, V, M E Hochberg and J F Guégan. 2004. "Ecology Drives the Worldwide Distribution of Human Diseases." *Public Library of Science Biology* 2(6): 740-746.

23 UN Population Division. 2009.

24 UNAIDS. 2010.

25 Ibid.

26 UN Population Division. 2009.