

Introduction to Public Health (LCHS4004_LON)

Lecturer

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INTRODUCTION

This assignment was proposed to the student of public social health care that is supposed to aim an epidemic disease chosen by the students which implies talking about what measures what consequences and impact could have in the public lives. I have chosen HIV/AIDS because was one of the most diseases that caused major desistability in society through the decades of 80's and 90's.

The HIV/AIDS epidemic has taken the breadth of a global crisis. It is one of the major challenges posed to development and social progress. In the worst-hit countries, the epidemic erases decades of growth, destroys the economy, threatens security, and destabilizes societies.

In addition to the suffering, it imposes on individuals and their families, the epidemic profoundly affects the social and economic fabric of societies. HIV/AIDS has become a terrible threat to the world of work: it reaches the most productive segment of the workforce, reduces its profits, considerably increases the expenditure of companies in all sectors of activity because it reduces production, increases labor costs, leads to a loss of skills and experience. It also poses a threat to fundamental rights at work, in particular with the discrimination and stigmatization of workers and people living with or affected by HIV/AIDS. The epidemic, with its consequences, affects vulnerable groups, women, and children more deeply, as it accentuates inequalities between men and women and exacerbates the problem of child labor.

What is HIV/AIDS?

HIV (Human Immunodeficiency Virus) is a virus that attacks the immune system. (The immune system fights infections and diseases in a person's body.) Over time, HIV weakens a person's immune system, so it has a very hard time fighting diseases. HIV causes AIDS (Acquired Immune Deficiency Syndrome). People with HIV can have it for many years before it develops into AIDS.

Acquired: means that AIDS is not hereditary, but contracted by the sick person of another person already infected with the HIV virus or aids patient

Immune: Defense

Disability: Weakening of the defense system

Syndrome: set of signs and symptoms that develop at the same time and indicate the existence of a disease.

Acquired Immunodeficiency Syndrome (AIDS) was recognized in the mid-1981, in the USA, from the identification of a high number of adult males, homosexual and residents of San Francisco or New York, who had Kaposi's sarcoma, Pneumocystis carinii pneumonia and immune system involvement, which led to the conclusion that it was a new disease, not yet classified, probably infectious and transmissible etiology. Given that in the first patients who were diagnosed with this syndrome, they were homosexuals and drug users, there became the society intolerant of these behaviors considered by the majority as undesirable.

It is present in the blood of infected people, as well as in other fluids such as semen, vaginal secretion, and breast milk. Transmission occurs predominantly sexually, but also through contact with contaminated blood, transplacental route or breastfeeding. In the acute phase, which occurs weeks after infection, the patient often presents symptoms of a nonspecific viral infection and has a high burden of viruses replicating, and the probability of transmitting the disease is significantly higher. After the acute phase, there is an asymptomatic period of variable duration, in which the virus continues to replicate and there is a progressive decrease in immunity, to a point where the organism becomes highly susceptible to opportunistic infections, neoplasms and autoimmune manifestations. This last phase is called acquired immunodeficiency syndrome (AIDS).

In 1986, a second etiological agent was identified, also retrovirus, with characteristics similar to HIV-1, called HIV-2. That same year, an international committee recommended the term HIV (Human Immunodeficiency Virus) to name it, recognizing it as capable of infecting humans. HIV is a retrovirus with RNA genome, of the Retroviridae Family (retrovirus) and subfamily Lentivirinae. It belongs to the group of cytopathic and non-oncogenic retroviruses that need, to multiply, an enzyme called reverse transcriptase, responsible for the transcription of viral RNA for a DNA copy, which can then integrate into the host genome. Although it is not known for sure what the origin of HIV-1 and 2 is, it is known that a large family of retroviruses related to them is present in non-human primates in sub-Saharan Africa.

All members of this retrovirus family have a similar genomic structure, presenting homology around 50%. In addition, everyone has the ability to infect lymphocytes through the CD4 receptor. Apparently, HIV1 and HIV2 began infecting man a few decades ago; some recent scientific studies suggest that this occurred between the 1940s and 1950s. Numerous retroviruses of non-human primates found in Africa have shown great similarity with HIV-1 and HIV2.

How is HIV spread?

HIV is passed from person to person. This happens when a person with HIV gets his/her blood, semen, vaginal fluid, or breast milk inside another person's body. There is no risk of getting HIV from the person's urine, sweat, tears, saliva, or vomit unless there is also blood in it. A person of any age, sex, ethnic group, religion, economic background, or sexual orientation can get HIV. It is not who you are. It is what you do that puts you at risk. Anyone who shares needles, shares work to inject drugs, or has unprotected sex (sex without a condom) with someone who has HIV is at very high risk for getting infected. A mother with HIV can also pass the virus to her baby during pregnancy, during birth, or by breast feeding. It is not possible to tell if people have HIV by looking at them. People can have HIV for many years and not know they have it. They can also pass HIV is a virus that hurts the body's immune system. It is not who you are. It is what you do that puts you at risk for getting HIV it to others without knowing it. That is why it is so important for people to get tested to find out if they have HIV. People with HIV who look and feel healthy or have very low or undetectable levels of virus, can still pass HIV to others.

Levels of incidence worldwide

Incidence, in epidemiology, occurrence of new cases of disease, injury, or other medical conditions over a specified time period, typically calculated as a rate or proportion.

Since the beginning of the epidemic, 84.2 million (64.0–113.0 million) people have been infected with the HIV virus and about 40.1 million (33.6–48.6 million) people have died of HIV.

Globally, 38.4 million (33.9 – 43.8 million) people were living with HIV at the end of 2021. An estimated 0.7% (0.6-0.8%) of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions.

	People living with HIV in 2021	People acquiring HIV in 2021	People dying from HIV related causes 2021
j Total	38.4 million	1.5 million	650 000
Adults (15+ years)	36.7 million	1.3 million	560 000
Women (15+ years)	19.7 million	640 000	240 000
Men (15+ years)	16.9 million	680 000	320 000
Children (<15 years)	1.7 million	160 000	98 000

Level of incidence in the United Kingdom

2021	England	Wales	North Ireland	Scotland
 Total	2701	60	76	0
Women (15+ years)	794	20	22	0
Men (15+ years)	1 897	40	54	0
Children (<15 years)	10	0	0	0

Deaths by HIV	723	19	6	0
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How does HIV affect a person's health?

When people first get infected with HIV, they may or may not feel sick. Some get flu-like symptoms, they may get a fever, sore throat, swollen glands, or a skin rash. These symptoms will go away without treatment, but HIV stays in their blood where it grows and begins to destroy their immune system. People with HIV can have it for many years before their immune system gets weak and other symptoms appear. After symptoms appear, people with HIV will feel better with treatment. People with HIV may get sick more often and have illnesses that are harder to treat than people who do not have HIV. Sometimes people with HIV may get very sick.

How do people know they have HIV?

HIV is most often diagnosed in adults and in children over 2 years old by tests that look for *HIV antibodies*.

HIV antibodies are substances the immune system makes to fight HIV. If the test finds HIV antibodies, the test result is HIV positive. This means the person has HIV. At birth, all infants will have HIV antibodies in their blood if their mothers have HIV. Until infants are 6 to 18 months old, they have their mother's HIV antibodies. To find out if an infant has HIV, a blood test called a PCR (polymerase chain reaction) is done. A PCR test is different from an HIV antibody test. Rather than look for HIV antibodies, a PCR test looks for HIV in an infant's blood. In almost every case, the test can tell if the infant has HIV by the time, he/she is between 1 and 4 months old. If HIV is found, the PCR test will be positive. This means the infant has HIV.

How does HIV attack a person's immune system?

When HIV gets inside a person's body, it attacks his/her immune system. (The immune system fights infections and diseases.) The immune system has many kinds of white blood cells to fight infections. HIV finds the white blood cells, called CD4 cells. HIV gets inside the CD4 cell and makes copies of itself. Then, HIV kills the CD4 cell and the new HIV copies find other CD4 cells to get inside and start the cycle again. The immune system tries to control HIV by making more CD4 cells. But when the immune system cannot make CD4 cells fast enough, the amount of virus in the body goes up and the number of CD4 cells goes down. Because the immune system can no longer control HIV, the person can become sick. A weak immune system has a hard time fighting germs, even the germs that are around us all the time. These infections might last longer, be more severe, and return more often in someone with a weak immune system. The picture below shows what happens in your child's body when HIV attacks your child's immune system. Think of the running water as HIV making copies of itself. Think of the drain as the immune system (CD4 cells) working to get rid of the virus. The clogged drain, or weak immune system, cannot get rid of HIV fast enough. The water goes up in the sink just the way the amount of HIV can go up in your child's blood. When this happens, your child has a high viral load.

Promotion and Prevention of HIV Infection

Population and cross-sectoral preventive actions should be promoted, focusing on promoting safe sexual practices in the general population and modifying risky sexual behaviors, as well as on harm reduction strategies in drug users. It is the role of primary care teams to engage in educational campaigns and seek ways to disseminate them in their territory of activity, having special importance the participation of the RG in these actions.

Population strategies should be complemented by clinical actions, in which individuals with higher risk-associated behavior are identified, to provide more intensive counseling and more frequent testing for sexually transmitted infections (STIs), including HIV. These risk behaviors include sexual intercourse (homo or heterosexual) without the use of condoms; sharing of syringes and needles, especially in the use of injectable drugs; and reuse of sharp objects with the presence of HIV-contaminated blood or fluids. Special attention should be paid to population groups with greater frequency of these risk behaviors, such as sex workers, young people with multiple sexual partners and people with drug addiction such as cocaine and crack. It is noteworthy that, when assisting a person with risk behavior and with a negative result for HIV, counseling for the prevention of STIs should be strengthened.

The use of barrier methods is an essential strategy for HIV prevention. A systematic review showed that the effectiveness of male condoms in reducing heterosexual HIV transmission in serodiscordant couples is 80%. For homosexual anal sex, the effectiveness of consistent condom uses in reducing HIV transmission is 70%³. Condoms, including female condoms, should be easily available in primary care units, and there may be no bureaucracies for their distribution.

Antiretroviral prophylaxis is recommended for all cases at significant risk of HIV transmission. Exposure is understood as exposure at risk of transmission when there is contact with high-risk biological materials, such as: blood and blood derivatives, semen, vaginal fluid, serosa fluids, amniotic fluid, csf and joint fluid; through percutaneous exposure, by contact with mucous membranes (including sexual exposure), by cutaneous means involving unhealthy skin or by biting with the presence of blood.

Conclusion

HIV is pandemic, with heterogeneous distribution worldwide, currently with about 33 million individuals affected – an incidence of about two million/year. It is characteristically a global public health problem

There is still no effective vaccine against this virus.

The development of a vaccine is complex and laborious, because it is a pathogen that maintains a structural pattern and becomes even more challenging when it comes to a virus with high mutation/recombination capacity and that has circulation of several variants in the same individual, as in the case of HIV and *its* almost-species, there are also two different subtypes in the same population.

In prevention should not be considered risk groups, but risk behaviors and, therefore, correct information and the use of common sense allow, in many cases, to keep this virus at a distance.

Prevention includes the adoption of measures such as:

1. Condom use
2. Avoid direct contact with blood or its products
3. Take the HIV test

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