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Fighting HIV and AIDS

Winning the battle against HIV and AIDS

Briefing paper

By Torrin Wilkins, May 29th, 2019

Centre

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Torrin is the Director and Founder of Centre. He has written articles for multiple publications including a weekly column for Backbench. He has also been interviewed on both the BBC and LBC. Torrin has a Political Studies degree from Aberystwyth University.

About Centre

We are an independent non-profit foundation and cross-party think tank. Our mission is to rebuild the centre ground and to create a more centrist and moderate politics. We support better public services and a strong economy inspired by policies from the Nordic countries.

To achieve these goals, we work with people from across the UK and party politics. This includes engaging with politicians and our networks, which include academia, politics, and law.

Our work includes creating new conversations by hosting events and conducting interviews. We also produce new policy ideas to better inform debate, publish papers, and release articles. We aim to build consensus, shape public opinion, and work with policymakers to change policy.

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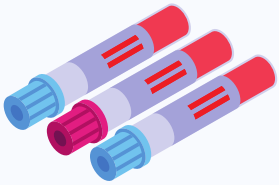
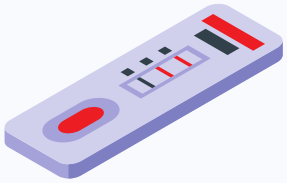
Summary

The earliest known case of HIV is traced back to the 1920s. HIV weakens the immune system, allowing AIDS, a set of diseases, to infect the body.



To stop people from being infected with HIV, Pre-exposure Prophylaxis (PrEP) and Post-exposure Prophylaxis (PEP) are available. However, if someone catches HIV, antiretroviral treatments can only suppress HIV.



The only cases where HIV has been cured involved stem cell transplants. However, other treatments are being tested, such as a shock and kill method for remaining HIV cells.

To distribute any new drug, the UK should create an HIV drugs fund, and it may be useful to fund US-based organisations there as well if the drug is not free.

Introduction

The new experimental drug to treat HIV, which uses a ‘shock and kill’ approach to target the virus, represents a major step forward in medicine. It means that, for the first time since the HIV outbreak occurred, a world free of HIV and AIDS is possible. With such a situation possible, the UK government must be prepared to distribute the new drugs. This paper, therefore, contains a definition of HIV and AIDS, looks at their histories, explores the drugs used to treat them, looks at possible cures, and then proposes a plan for distributing new HIV drugs.

Chapter one

Understanding HIV and AIDS

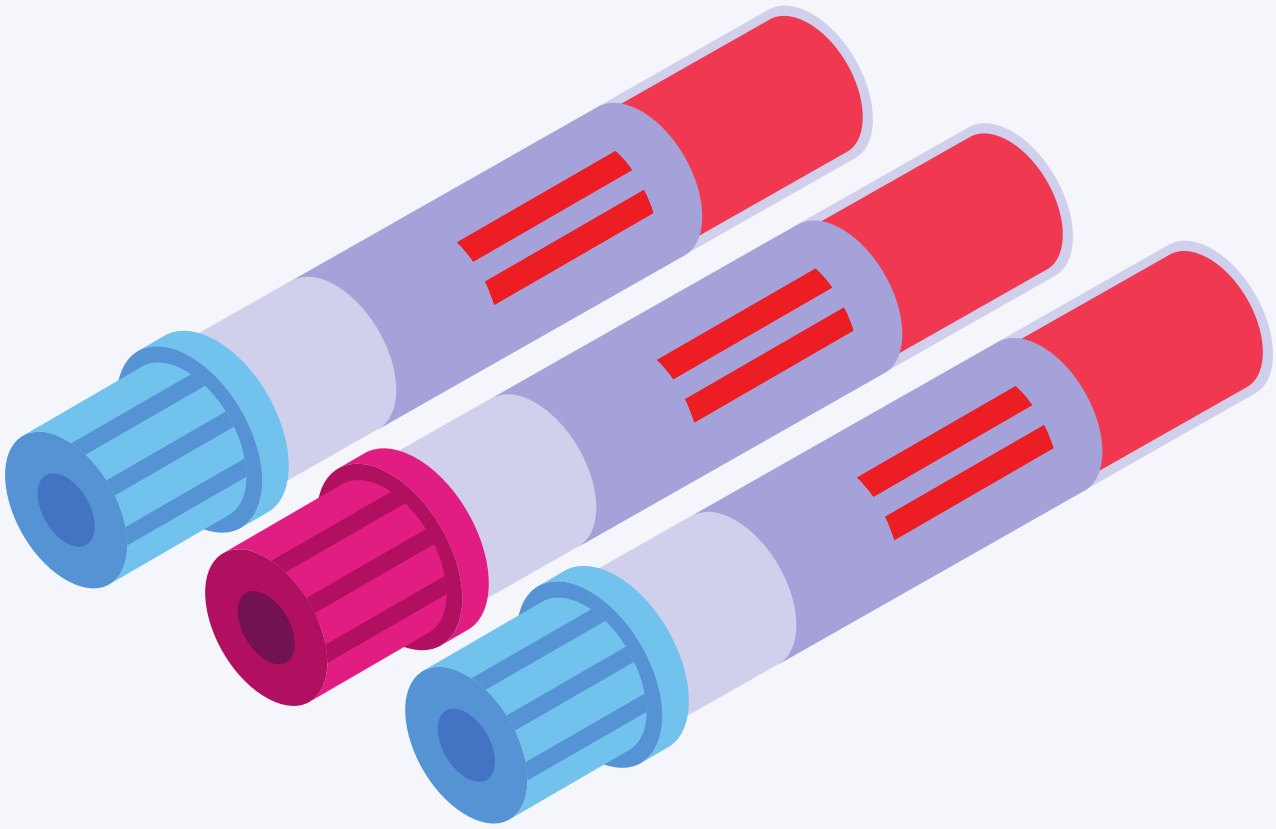
The earliest known case of HIV was in the 1920s in what is now the Democratic Republic of Congo. After that, it spread until it reached the United States. In the 1980s, HIV spread rapidly, killing thousands of people. It took until the 1990s for antiretroviral treatments to become available.

The human immunodeficiency virus (HIV) is a virus that weakens the body's immune system. Over time, the virus will weaken the immune system further, leaving it vulnerable to infection without treatment. HIV can be transmitted through blood transfusions, sexual activity, and other routes such as sharing needles, but symptoms often do not appear until the infection has progressed.

Acquired Immunodeficiency Syndrome (AIDS) happens when HIV has weakened a person's immune system to the extent that the body is extremely susceptible to attack. The infections and certain types of cancer that can develop as a result of this are known as AIDS. AIDS is not a virus but a condition that develops when HIV severely weakens the immune system, meaning that curing HIV would also prevent AIDS.

Chapter two

Existing treatments



Pre-exposure prophylaxis (PrEP)
Pre-exposure prophylaxis is used to prevent HIV transmission to HIV-negative individuals. However, this drug relies on those with HIV to both tell their partner, to know themselves that they have HIV, and for the partner to want to take the drug. However, despite these disadvantages, the results of the Partner 2 study were that "...the risk of HIV transmission from an HIV-infected man receiving ART with a plasma HIV-1 RNA (viral load) of less than 200 copies per mL over the preceding year was, remarkably, zero, with a narrow upper 95% CI limit of 0.23 per 100 couple-years of follow-up"[1] meaning that the only issue for the effectiveness of these drugs is for the patients who do not take them.

Post-exposure Prophylaxis (PEP)
However, PrEP is most effective when someone knows they may be at risk of exposure to HIV. If the person doesn't know or doesn't say, then another treatment, Post-Exposure Prophylaxis, is available. This can stop HIV from infecting someone if used fast enough. Although it does not work in every case, "The risk of seroconversion was 89% lower among animals exposed to PEP compared with those that did not receive PEP..."[2] significantly reducing the risk for people as well.

Antiretroviral treatments
If someone is infected with HIV, then antiretroviral treatments can be used to stop the virus from spreading. Unfortunately, this simply holds HIV back rather than killing it. These drugs can help to extend the lives of people living with HIV for decades.

Chapter three

Finding a cure

Although current drugs can suppress HIV and stop it from spreading, they can't cure it completely. Currently, "...HIV-infected cells in a latent reservoir are not producing new copies of the virus, HIV medicines do not affect them"[3].

A new drug developed by Gilead stuns them and then destroys them. The stunning drug is "TLR7 agonist GS-9620"[4] whilst the drug "PGT121"[5] then kills them, leaving the person free of HIV or with fewer cells infected with the virus. The new drug will still need to go through clinical trials before it can be used on HIV-positive people who wish to use it.

This gives the UK time to develop a plan for distributing any drugs which can potentially cure HIV, even during the experimental stage. These types of treatment may be considered for patients with no alternative options.

One reason we know it is possible to cure HIV is the existence of Timothy Brown, who is also known as the 'Berlin Patient.' Timothy had leukaemia, a form of cancer that attacks the parts of the body that create blood. He had this three times, with the first treatment consisting of chemotherapy, which eventually put him into remission. The second time he had leukaemia, the doctors used bone marrow from a "...donor who had a mutation called CCR5 Delta 32 on the CD4 cells, making them nearly immune to HIV..."[6] and after the second treatment, he was free of HIV. He then ended up with leukaemia for a third time, using the same donor to treat him, which resulted in a long six-year recovery. The 'London patient' also had a similar treatment with a CCR5 transplant to leave them free of HIV.

Another long-term approach is to use vaccination to stop HIV from spreading any further. There is currently a drug in China that is going through clinical trials, which uses "...HIV DNA..."[7].

Chapter four

Distribution

As HIV can be passed from one person to another, this is a global, rather than national, issue. The UK has the option of using part of its aid budget to help fund a global effort to eradicate the disease. The best platform for this work will likely be within the World Health Organisation (WHO), which is an agency of the United Nations. However, this task faces some large challenges. The first is dealing with the stigma around HIV existing in some countries, making it harder for those with HIV to come forward for treatment; secondly, unstable areas such as war zones will be difficult to reach; and finally, knowledge of a cure will have to spread to everyone with the virus.

Treatment in the United States is also a priority, as this country lacks free universal health care. Although organisations such as the Elton John AIDS Foundation will likely be helping to distribute the drug within the US, UK funding for the foundation may also be necessary. It may also be possible to work together with the US government to fund the program. Although this offer will likely be rejected, the UK must show a willingness to work together with other countries to increase the availability of these drugs.

One stated reason for urgency in developing treatments is concern about HIV transmission, though it is important to note that HIV is not airborne. If this happens, then HIV would spread more quickly, the number of people infected would increase by a significant percentage, and the costs would likely be far greater.

For the first time, there is a chance to create a world free from HIV; therefore, our aim should be nothing less than to eradicate HIV. The speed at which this will happen relies on government action, individuals coming forward for treatment, and the speed at which these types of drugs are developed further. It will also rely on reducing the stigma attached to the illness and international cooperation. While these goals are difficult to reach, they are now possible. With the risk of HIV becoming airborne and the number of people already dying from this disease, it is urgent that we eliminate HIV.

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Company details

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Disclaimers

This briefing paper is not meant to support any company or organisation. We fully support efforts to find a cure, but this does not extend to supporting those companies doing so and their actions. Whilst this paper includes the 'shock and kill' drug being tested by Gilead, GSK's joint venture ViiV Healthcare is also working on HIV treatments. Whilst this paper provides information on the subject, it is neither unbiased nor medical advice. There is currently no cure for HIV. The paper is a republished version of the original, and the titles of those who contributed to this paper have been updated, including endorsements, forewords, authors and editors. Any errors or omissions are the responsibility of the author alone.

Author Disclosure Statement

Immediate family member with financial interests in Gilead Sciences, Inc. We do not know any other HIV drug that could cure HIV aside from the stem cell treatments that were discussed in this paper. However, in the disclaimer, the GSK company Viiv was mentioned, which is attempting to find a cure for HIV.

Reference this paper

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Reference as a journal article: Wilkins, T. 'Fighting HIV and AIDS', Centre Think Tank, 3 (2019) pp. 1-18.

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