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Chasing a cure: the history of HIV/Aids

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In the early 1980s, HIV/Aids was seen as fatal. But thanks to advances in medicine and healthcare, many patients now live long, full lives. This scientific success story, however, brings new challenges to an ageing population with HIV



Aids activists at a rally - there is still much to be done in educating the public about the disease. Photograph: Hotli Simanjuntak/EPA

When the first cases of a rare and unusually aggressive cancer, Kaposi's sarcoma, was first noticed

among a group of gay men in New York and California in 1981, it was not clear what was causing it and why. Previously healthy young men were succumbing to serious immune deficiency and by the end of the year there were 121 reported deaths.

The situation was compounded by a wave of hysteria over what was labelled a "gay plague", and many died untreated, due to a mixture of fear, ignorance and social stigma. It wasn't until 1983 that the HIV virus was isolated and identified by researchers at the Pasteur Institute in France. Although attitudes have gradually changed, 36 years on and the World Health Organization (WHO) estimates that more than 35 million people have died of HIV/Aids.

For many years, being diagnosed with HIV was tantamount to a death sentence. Now, in the developed world and in a growing number of developing countries, HIV has become a chronic, but manageable condition. So what's changed?

"By taking medicines on a daily basis, most people [with HIV] are able to live full lives, into their 70s and 80s. It's not perfect, but it's like other chronic diseases that require lifelong treatment," says John Pottage, chief scientific and medical officer of ViiV Healthcare - an independent specialist company, majority-owned by GSK, with Pfizer and Shionogi as shareholders.

Pottage began his training in infectious diseases just two weeks after the first cases of HIV were reported. Working in academic medicine for 20 years before moving into industry, he has seen the transformation of treatment for people with HIV.

"First we had no treatment, then we had partial treatments. Now we have very good treatments," he says.



Most people with HIV, thanks to current medicines, are able to lead full lives. Photograph: Tony Karumba/AFP/Getty Images

When the virus was first discovered, treating it was initially considered impossible. However, scientists at Burroughs Wellcome, a predecessor of GSK, identified that zidovudine (also known as azidothymidine - AZT) had an impact on the virus. AZT was the first anti-retroviral drug shown to treat HIV and was given approval in the US in March 1987. Although AZT had a number of serious side-effects, including anaemia, its use marked a major breakthrough in combating the virus.

While not a perfect medicine, AZT allowed many people with HIV to survive long enough to see the next significant change in HIV treatment in 1996, when HAART - highly active anti-retroviral

therapy – was developed. HAART is a combination of different types of drugs that act to prevent the virus replicating and developing resistance. The death rate from HIV/Aids was drastically reduced after treatment with HAART became widely used.

The emphasis in healthcare is now very much proactive: people are encouraged to be tested for HIV and, if shown to be HIV-positive, put on an anti-retroviral treatment immediately, rather than waiting and presenting when the symptoms show. This means that their viral load – the amount of HIV that is detectable in the bloodstream – can remain low, so they stay healthy and be less likely to pass on the virus.

According to Pottage, the way forward is to take a year-zero approach to tackling the virus: “How would you treat HIV if it appeared today, with all the medicines we have currently?” Taking up the challenge, ViiV Healthcare is researching ways to best prevent, treat and, potentially, one day find a cure. At present, daily pills containing fewer drugs and long-acting injectables are being considered.



Current medicine allows the disease to be treated and managed, but researchers are working to eventually find a cure.

Photograph: Mark Read/GSK

Eventually, there may be an option for longer-lasting injectable treatments. This approach to treatment is currently used for other diseases, such as osteoporosis.

“The direction of our research is to develop a range of options for patients,” Pottage says, “some as pills, others as long-lasting injectables. Each person is different: what works for one, won’t work for another. The treatment right now for patients is for combinations of medicines. And there’s no magic formula for that.”

This huge progress in treating HIV has also led to a whole new set of challenges, as people are living normal lifespans while still having the virus. Scientists need to think about how older people with HIV may be taking drugs for hypertension, diabetes or arthritis. How does HIV medicine interact with other diseases that people might get?

In addition, Pottage is concerned that a younger generation of people, who have never experienced a time when HIV was untreatable, won’t see the importance of continuing to fight against the virus. It is currently being held in check, but there remains the possibility that it will mutate and become resistant to current treatment options.

Nevertheless, the continuing improvements in the prognosis and treatment for people with HIV cannot be overestimated.

"Progress has been astonishing; there has been a dramatic shift in a short time," Pottage says. "It is a real testament to researchers and what everyone is trying to do."

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