HIV Vaccine Outreach Training

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Gay-related immune deficiency, or GRID.

- **1981**-An alarming number of gay men were dying of a mysterious disease in New York and San Francisco, some calling it the "gay plague" the CDC calling it Gay-Related Immune Deficiency, GRID.
- **1984**-CDC used the term "AIDS" for the first time. AIDS is now a pandemic.

HIV/AIDS Stigma

Believing that HIV/AIDS is a divine punishment for moral misconduct.

What are we going to cover?

- What is HIV?
- What is AIDS?
- Medications and Prevention Measures
- Is there a need for a Vaccine?
- HIV Vaccine Studies
- Difficulty finding an HIV Vaccine
- Correlation between COVID-19 and HIV

What is HIV?

- *Human immunodeficiency virus*

HIV is a virus that attacks cells that help the body fight off infection. This leads to a weakened immune system, making a person more vulnerable to other diseases and infections. HIV is most commonly spread through unprotected sex and the sharing of needles.

- *Can HIV kill you?*

No. HIV cannot kill you. If left untreated, HIV can lead to AIDS (acquired Immunodeficiency syndrome), which is the late-stage infection of HIV, and AIDS is what can eventually kill you.

- *Stages of HIV*

Acute-Newly infected, large amounts of HIV in blood, highly contagious, you may have flu-like symptoms.

Chronic-Asymptomatic or clinical latency. HIV is still active in your blood, but it' reproducing at a slower rate. It's possible to never have symptoms or get sick during this stage. In addition, this stage can last more than 10 years.

AIDS-The most severe stage of an HIV infection.

Source: "HIV and AIDS: The Basics." National Institutes of Health, U.S. Department of Health and Human Services, https://hivinfo.nih.gov/understanding-hiv/fact-sheets/hiv-and-aids-basics.

What is AIDS?

- AIDS is the last stage of an HIV infection, your CD4 cells, also known as T-cells have dropped below 200. This analysis leads to pulmonary infections, and increased mortality.
- AIDS stands for Acquired Immunodeficiency Syndrome.
  - ***Acquired***-*You can catch it*
  - ***Immunodeficiency***-*Weakness in the body's system that fights off diseases.*
  - ***Syndrome-****A group of health problems that make up a disease.*

Source: Simon, Viviana, et al. "HIV/AIDS Epidemiology, Pathogenesis, Prevention, and Treatment." Lancet (London, England), U.S. National Library of Medicine, 5 Aug. 2006, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2913538/.

In 2020 1,500,000 new infections worldwide

That's 1 person every 17 seconds infected with HIV.

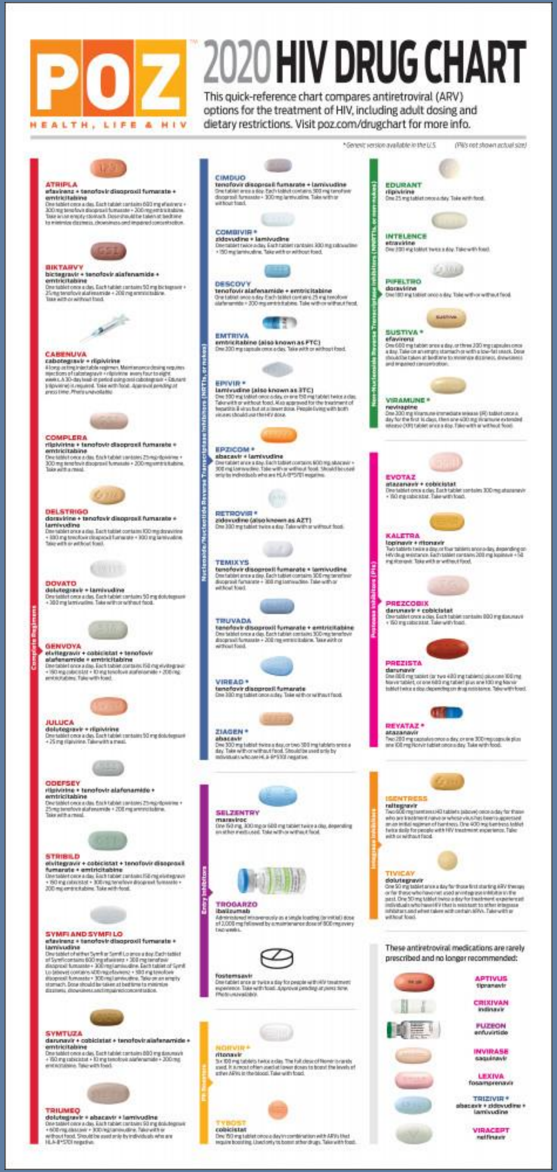
150,000 children in Sub-Saharan Africa aged 0-9 years were newly infected with HIV

"Home." *Desmond Tutu Health Foundation*, 13 Sept. 2021, https://desmondtutuhealthfoundation.org.za/.

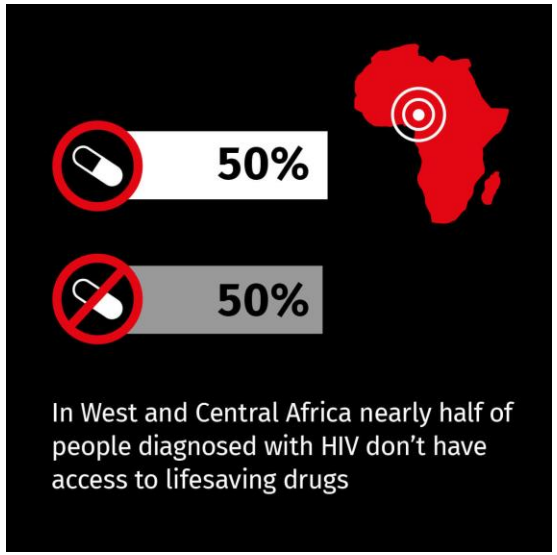
Are there medications and prevention methods?

- Yes, there are prevention measures and management medicines.
- Management Medicines:
  - Next slide
- Prevention measures:
  - PrEP-Pre-exposure prophylaxis-HIV negative individuals who are at risk of contracting HIV either by unprotected sex or though injection drug use.
  - Pep-Post-exposure prophylaxis-HIV negative who have had known exposure to HIV. Must start treatment within 72 hours of exposure. Every hour counts.

Source: "Prep vs. Pep." *National Institutes of Health*, U.S. Department of Health and Human Services, https://hivinfo.nih.gov/understanding-hiv/infographics/prep-vs-pep.


POZ
HEALTH, LIFE & HIV
2020 HIV DRUG CHART
This quick-reference chart compares antiretroviral (ARV) options for the treatment of HIV, including adult dosing and dietary restrictions. Visit poz.com/drugchart for more info.
*Generic version available in the U.S.
(Pills not shown actual size)
ATRIPLA
CIMDUO
EDURANT

Why is there still a need for an HIV Vaccine?



Behavior Barriers, access, education.

- **Behavior Barriers**-Taking daily medication, taking preventative medication, getting tested.
- **Access**-Access is not always available or easy for everyone.
- **Education**-Knowing your HIV status and what that status means.

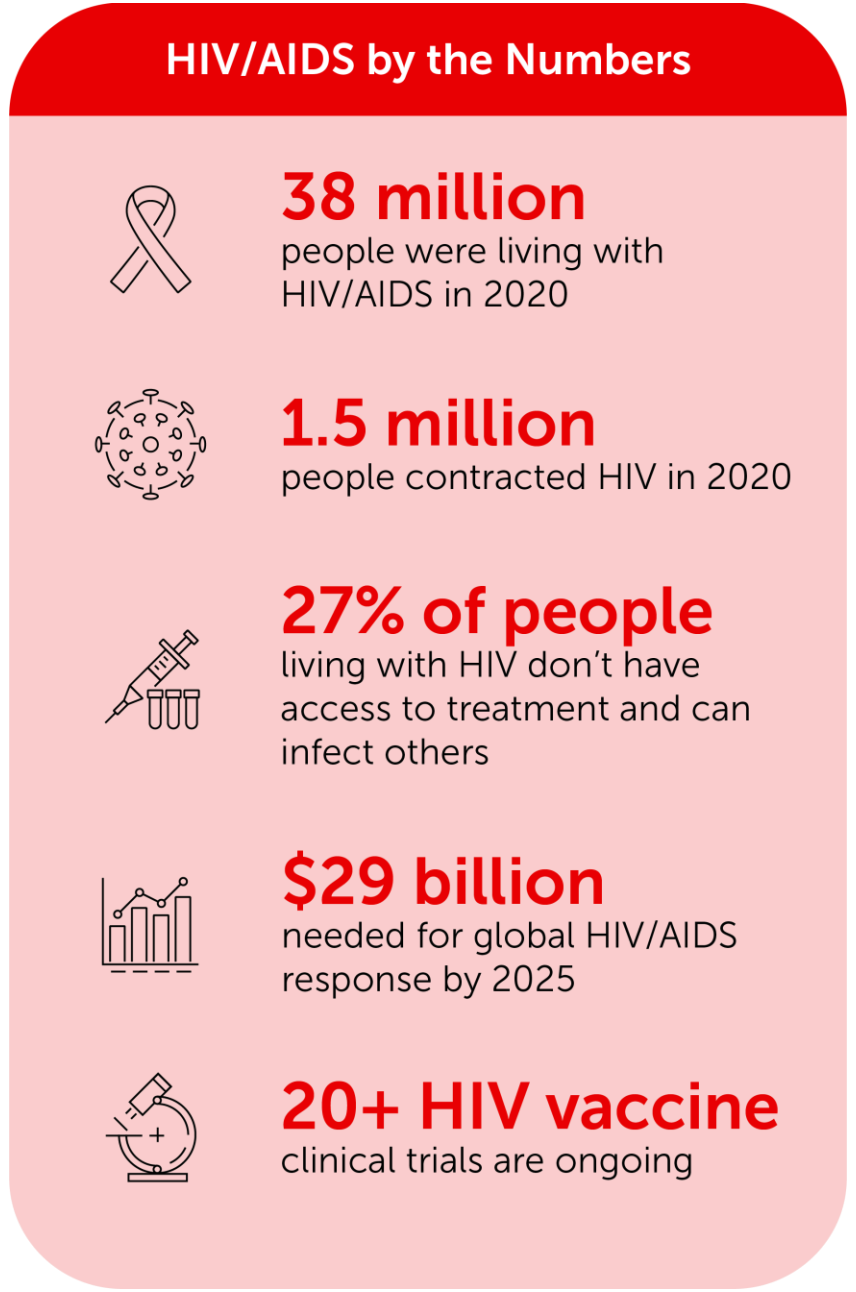
Photo Source: Photo 2 and 4-March, 16, 2020 Jon Rawlinson, Photo 3-https://www.goeco.org/area/volunteer-in-africa/south-africa/medical-outreach-and-hivaids-awareness. Photo1- https://msfaccess.org/about-us

HIV Vaccine studies

-Currently we do not have a Vaccine for HIV.

-We did come close, Thailand study, 30% efficacy, now our gold standard.

-At the HIV Vaccine Trials Unit, we have around 8 studies happening. They range from blood draws to vaccine injections, to behavior observations. All of the studies are paid. You must be HIV negative and be between the ages of 18-50.



"HIV Vaccines." *IAVI*, https://www.iavi.org/our-science/hiv-vaccines.

Difficulties finding an HIV Vaccine

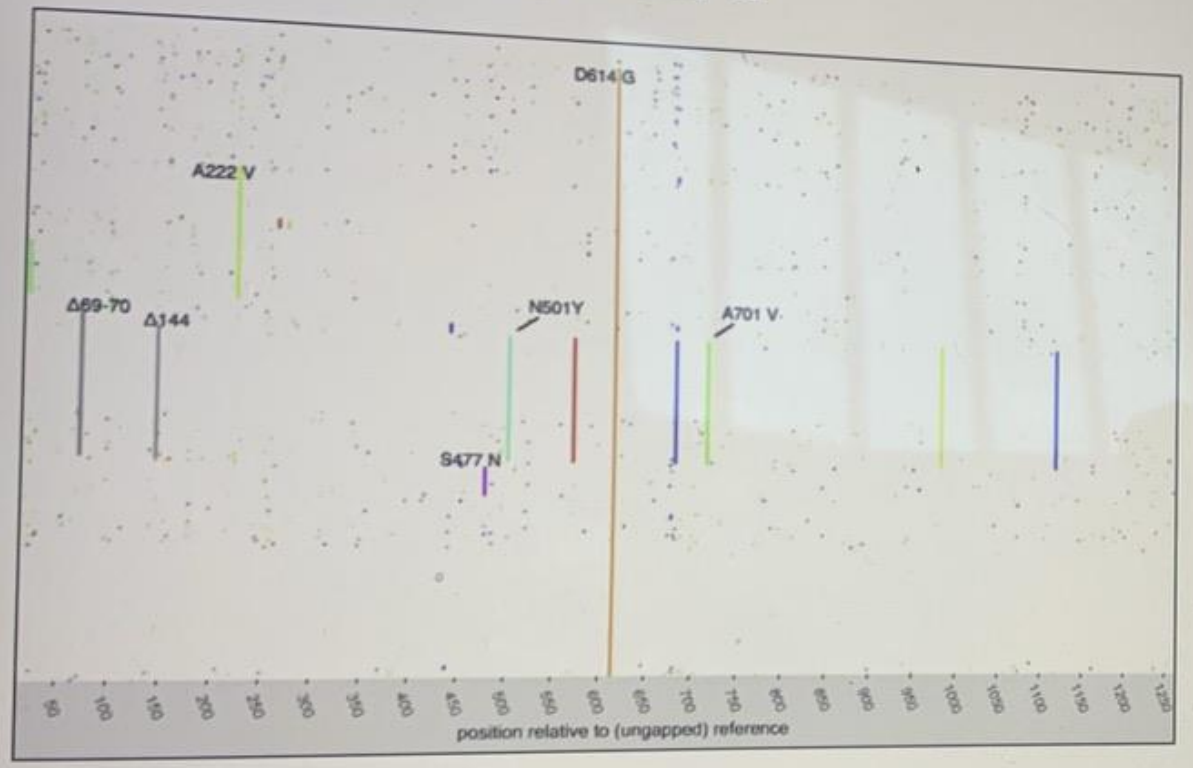
- HIV is one of the most cunning, complex pathogens ever encountered.
- HIV has a spike or envelope protein that binds to receptors on the surface of cells, it doesn't stay intact long enough to be efficiently attacked by the immune system.
- Reproduces quickly
- Many sub-types
- Many unique ways of evading our immune system
- Lack of political urgency
- Funding
- Interest from communities

Sequence Diversity of Spike vs. HIV

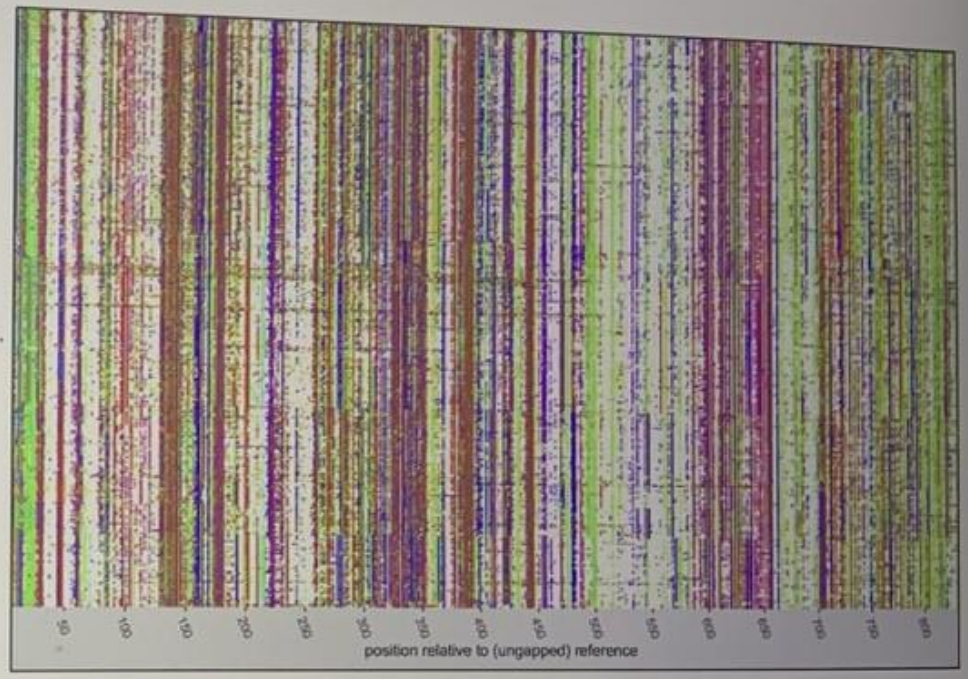
View

Hide thumbnail video

SARS-CoV-2



HIV-1



How did we get a COVID 19 vaccine so quickly?

- First, we can thank decades of frustrating and often fruitless research to find a vaccine for HIV.
- "Everything we do with every other pathogen spins off of things we've learned with HIV," said Anthony Fauci, a leader in HIV research as director of the National Institute of Allergy and Infectious Diseases since 1984.
- HIV and COVID-19 are similar, but one of the major differences is our bodies can clear COVID-19, our bodies cannot clear HIV.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