



Preventing HIV transmission

Human immunodeficiency virus (HIV) is a virus which attacks the immune system and if untreated can be deadly. There were an estimated 30,010 people living with HIV in Australia at the end of 2023. While there is no vaccine to prevent HIV, public health campaigns targeting HIV transmission have had significant impacts on preventing new cases of HIV. Central to these campaigns has been NHMRC funded research on the use of antiretroviral therapy and its role in suppressing the virus to prevent transmission and the efficacy of pre-exposure prophylaxis (PrEP) at the population level.



Origin

In Australia, the majority of HIV infections occur in men who have sex with men (MSM) with 57% of infections in 2023 attributed to this.

Antiretroviral therapy (ART) is the gold standard of treatment for HIV infection. While not a cure, the treatment works to stop the virus replicating, reducing the amount of virus in the body (viral load). For most people receiving ART, these medicines can reduce the viral load to undetectable levels.



Investment

NHMRC supported research at the Kirby Institute, University of New South Wales (UNSW) through multiple Project Grants, Program Grants and fellowships from 2005. This research centred around interventions to control sexually transmitted infections, prevention of HIV transmission and HIV surveillance.



Research

The Kirby Institute Opposites Attract study followed homosexual couples of differing HIV status. Over four years, and thousands of incidences of unprotected sex, no cases of linked HIV transmission were detected when HIV viral loads were undetectable.

Treatment as prevention (TasP) relies on HIV testing. UNSW research showed access to self-testing led to increased rates of testing.

Further research demonstrated the efficacy of PrEP at reducing HIV transmission at the population level.



Translation

Researchers quickly disseminated the results of the Opposites Attract study to clarify that HIV transmission could not occur when individuals had undetectable viral loads, including in MSM. These findings were key to the drafting of the “undetectable = untransmittable” (U=U) scientific consensus statement at the centre of the global U=U campaign.

Mathematical modelling has informed policy and led to the reduction of barriers to TasP. This has included easier access to HIV self-tests and listing of PrEP on the Pharmaceutical Benefits Scheme (PBS).

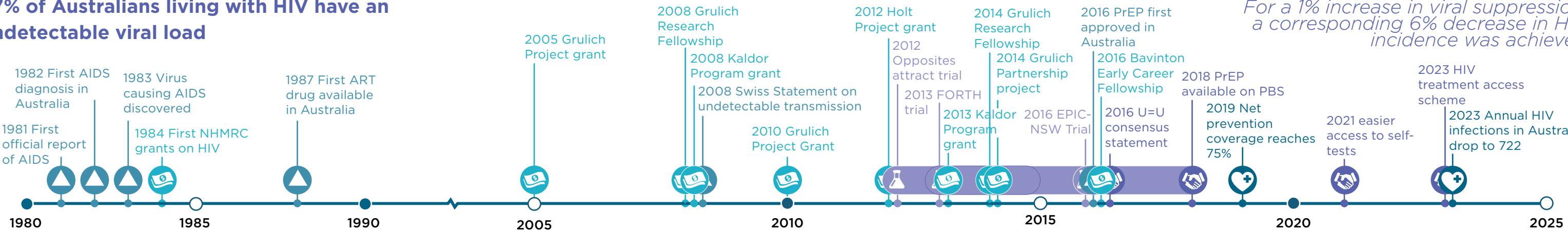


Impact

While prevention previously focussed only on the use of condoms, TasP (e.g. U=U) and use of PrEP are now established as additional biomedical methods which enable safe sex with HIV.

Among those practicing condomless sex, rates of use of biomedical prevention methods of HIV prevention have increased from 15% in 2014 to 60% in 2019. Since the acceptance of U=U and the introduction of PrEP, in the 2014-2019 period the number of HIV notifications in Australia has decreased by 16%.

87% of Australians living with HIV have an undetectable viral load



Researchers

Prof Andrew Grulich
Dr Benjamin Bavinton
Prof Martin Holt

Prof Rebecca Guy
A/Prof Richard Gray

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