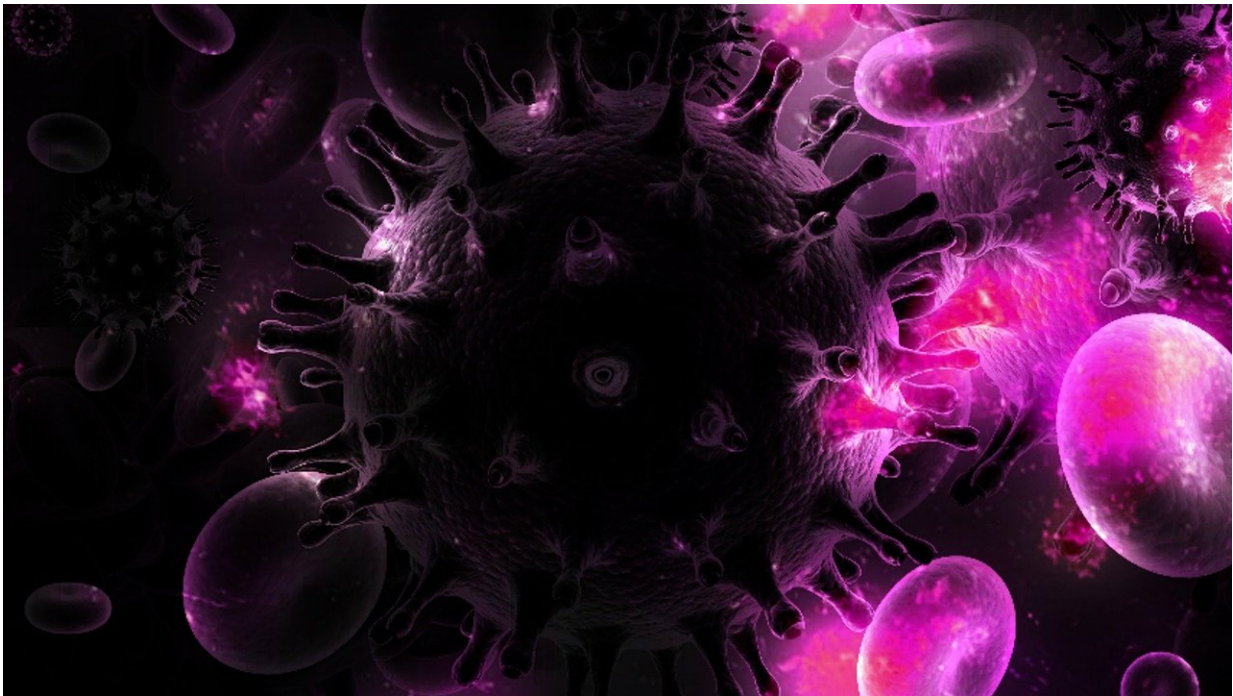


# PrEP implementation is associated with a rapid decline in new HIV infections

October 17 2018

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Study from Australia is the first to evaluate a population-level roll-out of pre-exposure prophylaxis (PrEP) in men who have sex with men.

Rapid, targeted, and high-coverage roll-out of pre-exposure prophylaxis (PrEP) to men who have sex with men was associated with a reduction in HIV diagnoses by 25% in one year across New South Wales (Australia),

according to a study published in *The Lancet HIV* journal.

Diagnoses in men who have sex with men across New South Wales reduced from 295 cases in the year before PrEP roll-out to 221 cases in the year after—the lowest levels recorded since the beginning of HIV surveillance in 1985.

The study, led by the Kirby Institute at UNSW Sydney, followed 3,700 men who had been dispensed PrEP as part of the roll-out and found generally high levels of adherence. In this group, the incidence of HIV infection was less than 1 in 2,000 per year, compared with an expected incidence of 2 per 100 per year or higher in the absence of PrEP.

Randomised controlled trials have previously demonstrated the efficacy of PrEP. In addition, mathematical models have predicted that PrEP can have a large and fast impact if rolled out rapidly and at high coverage for people at risk. However, empirical studies to confirm PrEP's population-level effectiveness have not tested these findings until now.

The study in New South Wales was possible due to the existing surveillance system for recent HIV infection in the area, which allowed researchers to quickly document the population-level effect of PrEP. It illustrates the successes possible with effective roll-out of PrEP.

Although a number of countries, including the USA, France, and England, have approved HIV PrEP, uptake has until recently been slow and geographically patchy.

"Our results support the population-level effectiveness of PrEP one year after rapid PrEP implementation at scale," says Professor Andrew Grulich, from the Kirby Institute at UNSW Sydney. "PrEP is a highly effective preventative approach when implemented alongside high levels of HIV testing and treatment. Roll-out should be prioritised as a crucial

component of HIV prevention in epidemics predominantly affecting men who have sex with men."

The study recruited 3,700 participants aged 18 years or older from 21 clinics across New South Wales. All participants in the study were at high risk of HIV infection, and were given PrEP for free. HIV testing was conducted at one and three months after enrolment into the trial, then every three months.

Among the 3,700 participants, 3,645 (99%) were dispensed PrEP or had a HIV test at least once during follow-up. During the year-long study, only two men became infected with HIV and these men were not adherent to PrEP.

The authors found that adherence to PrEP was high (median medication possession ratio of 98%). However, approximately 30% of participants had adherence below 80%, but this could also indicate on-demand PrEP use, or stopping using PrEP after a period of high-risk behaviour.

State-wide, the authors found that after PrEP roll-out there were 25% fewer HIV diagnoses, compared to the 12 months before PrEP roll-out (295 cases vs 221 cases).

The decline was greatest for recent HIV infections (32% decline, from 149 cases to 102 cases). These declines were greatest in men aged 45 years or older, Australian-born men, and those who lived in the gay neighbourhoods of Sydney.

In comparison with other international settings, PrEP roll-out in New South Wales was more rapid and at higher coverage—meeting the initial target of 3,700 participants on PrEP within eight months. 12 months after, 7,621 participants were taking part. By the end of the study, 9,714 people were taking part.

In the USA, PrEP was approved in 2012 and it was estimated that 492,000 men would benefit from the drug. However, uptake was sluggish before accelerating more recently, and by late 2016 it was estimated that 83,672 men in the US had commenced PrEP.

In England, the NHS announced it would provide PrEP to 10,000 patients through an implementation study in selected clinics from September 2017. Reductions in HIV diagnoses in 2017 in London have been attributed to a combination of increased testing and treatment, as well as PrEP sourced through trials or privately.

In France, 2,805 people (97% MSM) were prescribed PrEP in the first 12 months of roll-out in 2016 with only four new HIV infections in this cohort, but population-based trends in HIV have not yet been reported.

Professor Grulich adds: "This study involved a large-scale and state-wide response to ensure that PrEP was made available to men at high risk of HIV infection. This involved leadership from the NSW Government, advocacy groups working to help improve health literacy, and a network of free, publicly funded and private sexual health services serving men who have sex with men."

The authors note some limitations, including that they cannot rule out that some other factors may be involved in the reduced levels of infection at a state level, and some infections may have been missed if people did not attend the last HIV test at 12 months. They also note that some men may have obtained PrEP privately and the level of coverage may have been higher than described in the study.

Writing in a linked Comment, Professor Sheena McCormack, MRC Clinical Trials Unit, UK, notes that New South Wales was an ideal location to help identify the added benefit of PrEP as it has met the 90-90-90 targets for the proportion of individuals with HIV diagnosed,

treated, and virally suppressed, which were surpassed in 2016, but adds that most countries are unlikely to reach these targets by 2020.

She notes: "Now, the EPIC-NSW study has provided robust evidence for the added value of PrEP at the population level, as well as endorsing the biological efficacy in individuals who use PrEP consistently during periods of possible exposure to HIV."

**More information:** Population-level effectiveness of rapid, targeted, high-coverage roll-out of HIV pre-exposure prophylaxis in men who have sex with men: the EPIC-NSW prospective, *The Lancet HIV* (2018). [DOI: 10.1016/S2352-3018\(18\)30215-7](https://doi.org/10.1016/S2352-3018(18)30215-7)

Provided by Lancet

Citation: PrEP implementation is associated with a rapid decline in new HIV infections (2018, October 17) retrieved 5 May 2024 from <https://medicalxpress.com/news/2018-10-prep-rapid-decline-hiv-infections.html>

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