Time from HIV infection to diagnosis using CD4 depletion model, Thailand, 2014-2021

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BACKGROUND

- Timely diagnosis of HIV is crucial for effective treatment and prevention of transmission.
- In Thailand, despite advancements in HIV prevention and treatment, delays in diagnosis remain a significant challenge.
- We estimated delays in diagnosis (time from infection to diagnosis) and identified factors associated with the delay.

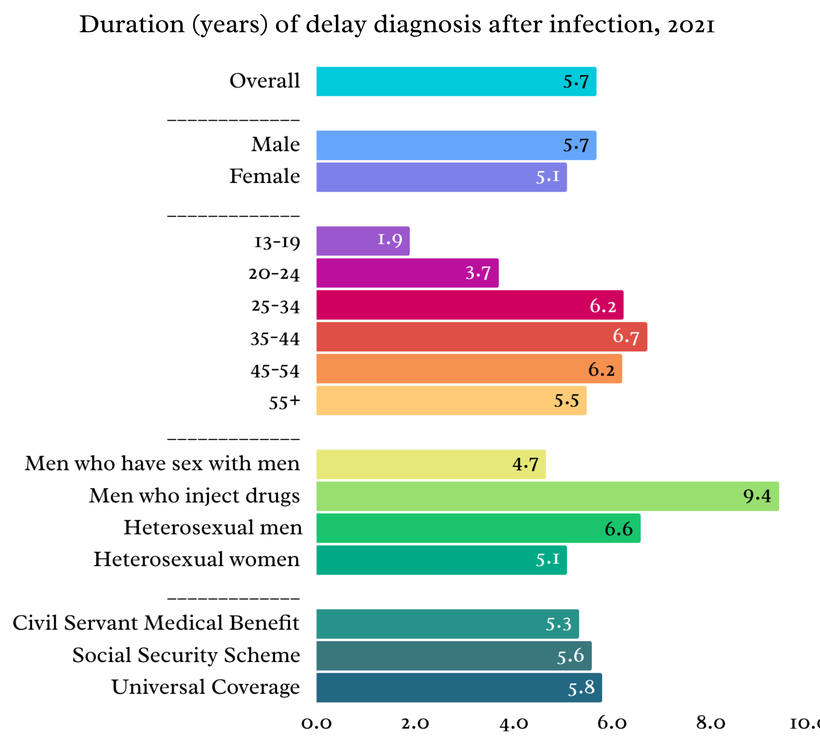
METHODS

- Data on 242,338 newly reported treatment-naïve people living with HIV ≥ 13 years diagnosed at 1,084 health units during 2014–2021 were obtained from Thailand's National AIDS Program.
- CD4 depletion model was used to estimate infection dates, adjusted for Asian population parameters.
- Time from infection to diagnosis was estimated as the difference between infection and diagnosis dates.
- Data abstracted: demographics, self-reported risk behaviors, HIV testing dates, and CD4 test results.
- Multivariable linear regression was applied to identify factors influencing diagnostic delays.

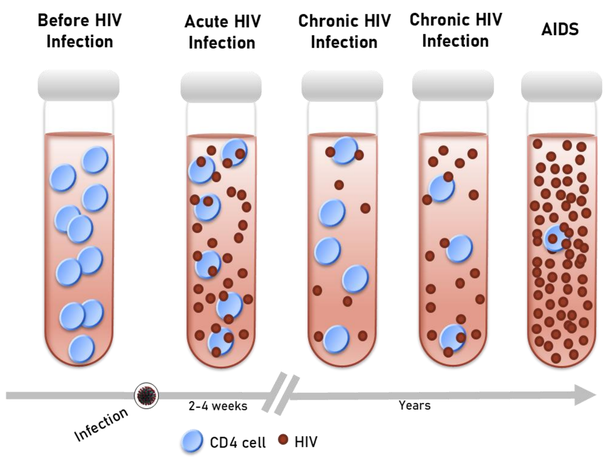
In Thailand, HIV diagnosis delays remain significant, with an average delay of 5.7 years in 2021 and only 27% diagnosed within one year.

Longer delays were seen in 25–54-year-olds, men who inject drugs, and heterosexual men.

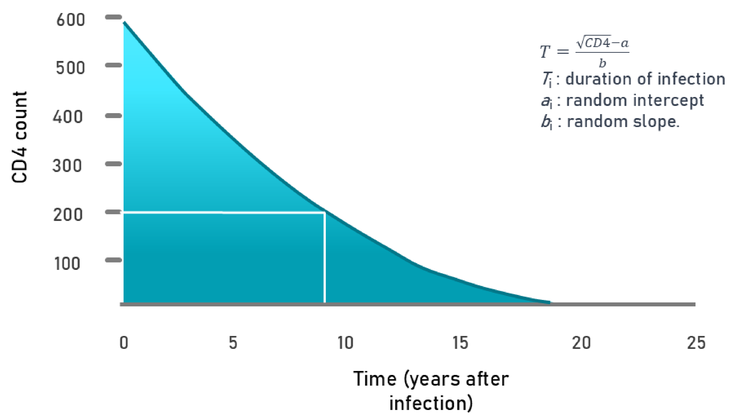
RESULTS



CD4 DEPLETION MODEL



Without treatment, HIV gradually depletes CD4 cells while increasing viral load. Over several years, the virus progresses through different stages, leading to immune system deterioration.



The CD4 depletion model relates the first CD4 test to the time of HIV infection onset through a linear mixed model.

CONCLUSIONS

- HIV diagnosis delays remain substantial, with no improvement from 2014 to 2021.
- Longer delays were observed among certain groups, including 25–54-year-olds, men who inject drugs, and heterosexual men.
- Reducing time to diagnosis can significantly enhance epidemic control and public health outcomes.

DISCLAIMER

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NHSO National Health Security Office

กรมควบคุมโรค Department of Disease Control

EPFAR esident's Emergency Plan for AIDS Relief

CDC U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION