

## Executive Summary

### Research Project: Economic evaluation of HIV Pre-Exposure Prophylaxis

#### Background and significance

Pre-Exposure Prophylaxis (PrEP) is one of the preventive measures for HIV infection in population with substantial risk such as Men who have Sex with Men (MSM), transgender women, people who inject drugs (PWID) and heterosexual HIV-1 sero-discordant couples. In Thailand, PrEP service has been supported by governmental bodies and private sectors, from both national and international levels. This service is run as a pilot programme and is available only in certain areas. It is also not included in any health coverage schemes. For more effective prevention against HIV as well as for keeping AIDs problems under control by 2030, the Department of Disease Control, Ministry of Public Health, had proposed an inclusion of such service into the Universal Health Coverage Benefit Package (UCBP). The service was selected for evaluation with health technology assessment, in which economic evaluation and budget impact analysis were conducted.

Health Intervention Technology Assessment Programme (HITAP) was assigned from the subcommittee of Health Benefit Package, National Health Security Office, to conduct an economic evaluation of the PrEP service, which covers both Tenofovir Disoproxil Fumarate (TDF) and Emtricitabine (FTC), as well as related laboratory tests. The evaluation was performed in order to aid the decision making process of whether to include the aforementioned service into the UCBP.

#### Methods and Results

This is a cost-utility analysis study that employed a mathematic model called AIDS Epidemic Model (AEM), version 4.13 Thailand baseline (6 March 2017), to simulate disease progression of AIDS in each of the six populations with substantial risk for HIV infection. These populations are MSM, Male Sex Worker (MSW), Transgender Sex Worker (TGSW), Transgender Casual sex Partner (TGCP), PWID and heterosexual HIV-1 sero-discordant couples. These populations accounted for approximately 245,000 people in 2019. The study compared the status quo scenario with when PrEP is implemented into such scenario. The scenarios with increasing coverage of existing HIV prevention services as well as HIV testing and treatment to achieve the 90 and 95 targets by 2030 were also analysed in comparison with when PrEP is implemented into these scenarios. Moreover, an increase in risk behaviours after receiving PrEP, such as condomless sex, which results in an increase in the rate of sexual transmitted diseases (STD), were taken into account. Finally, the study predicted financial burden of the budget holder within 5-year timeframe in the case that PrEP will have been successfully included into the UCBP.

The process of tackling AIDs problems following the national strategy with the target of 95-95-95 by 2030 will be highly cost-effective, in which the Incremental Cost-effectiveness Ratio (ICER) is 10,600 baht/DALYs saved. However, there will be 1,100 newly HIV-infected individuals in 2030, meaning that the international target of 1,000 newly HIV-infected individuals will not be achieved. The service was found to be cost-effective with ICER of 16,954 baht/DALYs saved, if PrEP service is to be available for every populations with substantial risk of HIV infection, and if the coverage of services is to be increased to reach the 95-95-95 target. In the scenario that PrEP is set to have a moderate effect (moderately continuous taking of PrEP, 40% service coverage and no change in individuals' substantial risk behaviour), the number of newly HIV-infected individuals will be 940 individuals in

2030, reaching the international target of lower than 1,000 newly HIV-infected individuals. It should be noted that this study has some limitations relating to condom use parameter in AEM model. The estimate of condom use was quite high as it was collected from Thailand Integrated Biological and Behavioral Surveillance Survey (IBBS) that asked people about their condom use at last sex rather than consistent condom use. So, it is believed that this figure tends to be overestimated which further decreased the impact of PrEP on averting new HIV cases in the population.

In the case that PrEP service is to be implemented for populations with substantial risk of HIV infection of approximately 245,000 individuals per year, with 69 tablets being given to MSM, MSW, TGSW and TGCP on average per year, 354 tablets to existing sero-discordant couple on average per year, 177 tablets to newly sero-discordant couple on average per year, and 303 tablets to PWID on average per year. The highest possible incremental budget will be approximately 405 million baht per year or 2,025 million baht in 5-year timeframe. This incremental budget includes the cost of medication of 237 million baht per year, the cost of laboratory test of 106 million per year, the cost of consultation of 6 million baht per year and the cost of OPD of 21 million baht per year. In the scenario that the risk becomes higher, there will be an increase of the budget from the cost of treatment for STD of 21 million baht per year, the cost for campaigning and promoting access to condoms of 10 million baht per year and the cost of condoms given during the campaign of approximately 4 million baht per year (as increased by 10%). Nevertheless, according to the estimation of number of individual who should receive PrEP service operating under the support from The Joint United Nations Programme on HIV/AIDS (UNAIDS), it was found that the budget will have to be increased by approximately 190 million baht per year or 950 million baht within 5 years (based on the price of TDF/FCT at 600 baht per bottle). If the price of TDF/FCT is decreased to 215 baht per bottle as it was purchased for the projects under support from the Global Fund, additional budget for PrEP will be approximately 118 million baht per year.

However, the sole inclusion of PrEP service into the status quo scenario with moderate effect of PrEP service, moderately continuous taking of medication, service coverage of 40% and no change in the risk behaviour, will decrease the incidence of newly HIV-infected individual from 5,474 individuals in 2019 to 2,554 individuals in 2030. The number of accumulated HIV- infected individual will decrease by 6,173 individuals and the number of accumulated death will decrease by 1,471 individuals. This is cost-effective in MSM population group with ICER of 90,647 baht/DALYs saved and for sero-discordant couples with ICER of 26,636 baht/DALYs saved. However, if the 95-95-95 target is not reached, there will be no decrease in the number of newly HIV-infected individuals to 1,000 per year. Nevertheless, the PrEP service will be less cost-effective if there is an increase in the risk behaviours such as a decrease in the use of condom, an increase in the number of partner and an increase in the incidence of STD. The PrEP service will not be beneficial for certain populations if the risk behaviours increase more than 4%.

### Policy recommendations

The PrEP service for populations with substantial risk is cost-effective in Thailand setting and its implementation will decrease the number of HIV-infected individual in the future. The research team proposed policy recommendations as follow.

1. NHSO should consider the inclusion of PrEP into the UCBP in which PrEP should be implemented for each of every risk populations, together with achieving the 95-95-95 target of

coverage of testing for HIV and receiving treatment, by subsidising the cost of PrEP and the cost of laboratory tests. The reimbursement should be linked to DMIS HIV/AIDS (NAP) for convenience to reimburse and to present progress report. Moreover, NHSO should reimburse budget to strengthening campaigns and promotion on condom use, giving out clean needles and equipment, offering methadone programme, offering HIV testing and giving treatment for STD, campaigning and educating for correct understanding about PrEP service, in order to prevent negative consequences that may arise from receiving the service.

2. The Department of Disease Control, Ministry of Public Health, together with clinical experts and academics in the related fields should develop a guideline for PrEP service administration and screening for risk behaviors, to improve staff's potential in terms of their understandings and skills about the service, such as consultation at pre-entering stage and during the service, as well as evaluation of risk behaviours and treatment of STD. The staffs should be able to analyse and report on monitoring of PrEP use in order to assure that individuals who receive the service genuinely follow clinician's recommendations. Service providers should offer PrEP for populations with substantial risk who require PrEP. A monitoring system should be established to oversee that the use of PrEP medication will not increase sexual risk behaviours. In addition, service providers should support and make the service recipients aware that PrEP adherence is important in order to prevent HIV transmission.

For more information: <http://www.hitap.net/documents/175473>