The optimization and evaluation of HIV screening algorithm used in men who have sex with men in metropolitan Bangkok, Thailand

Tippawan Pankamp1, Sarun Saensiriphan2, Yalda Jafar2, Napapat Bariri2, Sunee Sirivichayakul4, Nittaya Panuphak1, Praphan Panuphak1

1 Anonymous Clinic Laboratory, The Thai Red Cross AIDS Research Centre, Bangkok, Thailand 2 Faculty of Medical Technology, Prince of Songkla University, Songkhla, Thailand 3 Government of the Northwest Territories, Canada. 4 Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Background:
- Thailand aims to end the AIDS epidemic by 2030 using the Test and Start strategy.
- Anti-HIV testing algorithm which provides same-day HIV test result is currently recommended by the National Guidelines in order to facilitate immediate referral to antiretroviral therapy after a confirmed HIV diagnosis (3 positive results from 3 different anti-HIV tests).
- To scale-up access to HIV testing among key populations, mobile clinics to hot spots using whole blood on 3 rapid HIV test kits is commonly used.
- We studied performance characteristics of anti-HIV testing algorithm used in a mobile clinic compared to those used in a facility-based HIV testing clinic in Bangkok.

Methods:
- Mobile clinics to 4 saunas and 2 spa venues for men who have sex with men (MSM) in Bangkok were conducted.
- Anti-HIV testing algorithm used in the mobile clinic includes Alere DetermineTM HIV 1/2 as the first test, DoubleCheckGoldTM Ultra HIV 1/2 and SD Bioline HIV 1/2 3.0 as the second and third confirmatory tests, respectively. (Figure 1)
- All samples collected from the mobile clinics were re-tested by an anti-HIV testing algorithm used at the Thai Red Cross Anonymous Clinic which includes Architect HIV Ag/Ab or Elecsys HIV combi PT as the first test followed by Alere DetermineTM HIV 1/2 and Serodia HIV 1/2 as confirmatory tests. (Figure 2) All negative samples were tested by nucleic acid amplification test (NAAT) using Aptima assay and all positive samples were tested by less sensitive immunoassays (IA) to detect acute HIV infection (NAAT+ve in negative samples or less sensitive IA positive). Repeat anti-HIV testing must be encouraged, especially if the anti-HIV testing algorithm does not include a more sensitive 4th generation assay or NAAT.
- Results:
  - The anti-HIV testing algorithm used in Anonymous clinic, The Thai Red Cross AIDS Research Centre demonstrated a sensitivity of 100% (95% CI: 96.41, 100) and a specificity of 99.65% (95% CI: 98.09, 99.99).
  - Two hundred thirty-three MSM participants were tested through mobile clinics.
  - Confirmed HIV-positive test results were made in 36 (15.5%) MSM using the mobile clinic anti-HIV testing algorithm. Using the Thai Red Cross Anonymous Clinic algorithm, 38 (16.3%) MSM were found to be HIV positive.
  - We found that the mobile clinic anti-HIV testing algorithm had a sensitivity of 94.9% (95% CI: 82.7, 99.4 – due to 2 cases of acute HIV infection) and a specificity of 100% (95% CI: 98.1, 100).

Conclusion:
- The anti-HIV testing algorithm using whole blood on rapid test kits demonstrated satisfactory performance and allowed same-day HIV test result to be available through a mobile clinic model.
- For key populations with high HIV incidence, careful history taking to define the window period is crucial. Repeat anti-HIV testing must be encouraged, especially if the anti-HIV testing algorithm does not include a more sensitive 4th generation assay or NAAT.

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