

IS THE BED CAPTURE ENZYME IMMUNOASSAY USEFUL FOR SURVEILLANCE IN CONCENTRATED EPIDEMICS? THE CASE OF FEMALE SEX WORKERS IN INDONESIA

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Abstract. Although the BED capture enzyme immunoassay (BED-CEIA) tends to over-estimate HIV incidence in general population epidemics, its limitations may be less relevant to some sub-populations in concentrated epidemics. This study assesses the plausibility of BED-CEIA estimates for female sex workers (FSWs) in Indonesia. Data were derived from a cross-sectional anonymous linked behavioral and biological surveillance survey. Independent samples of 2,917 direct and indirect FSWs, were gathered from seven and five cities, respectively, via three-stage time-location sampling. Participants provided behavioral information, venous blood and vaginal swabs. Specimens testing positive for HIV were subjected to BED-CEIA to identify recent infections. The median duration of sex work was 12 months. The estimated HIV prevalence was 8.2% and the incidence was 4.1 per 100 person years, slightly lower than an Asian Epidemic Model (AEM) estimate. HIV incidence was higher among: direct FSWs ($p < 0.001$), those reporting genital ulcers in the past year ($p < 0.001$), those with active syphilis ($p = 0.017$), and those not receiving periodic presumptive treatment for STIs during the previous 6 months ($p = 0.045$). Low general population HIV prevalence, short durations of sex work and low ART coverage of those eligible for treatment make it unlikely that HIV incidence estimates for FSWs in Indonesia are distorted by long-standing infections and viral suppression. External consistency with model-based estimates and internal consistency in regard to known risk factors for HIV infection add to the plausibility of the estimates. Pending advances in methods for estimating HIV incidence, it may be premature to summarily dismiss the BED-CEIA in concentrated HIV epidemics.

Keywords: BED assay, HIV incidence, concentrated epidemics, female sex-workers, surveillance, Indonesia

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