

Performance of the New Laboratory-Based Algorithm for HIV Diagnosis in Southwestern China

Authors : Yanhua Zhao, Chenli Rao, Dongdong Li, Chuanmin Tao

Abstract : The Chinese Centers for Disease Control and Prevention (CCDC) issued a new laboratory-based algorithm for HIV diagnosis on April 2016, which initially screens with a combination HIV-1/HIV-2 antigen/antibody fourth-generation immunoassay (IA) followed, when reactive, an HIV-1/HIV-2 undifferentiated antibody IA in duplicate. Reactive specimens with concordant results undergo supplemental tests with western blots, or HIV-1 nucleic acid tests (NATs) and non-reactive specimens with discordant results receive HIV-1 NATs or p24 antigen tests or 2-4 weeks follow-up tests. However, little data evaluating the application of the new algorithm have been reported to date. The study was to evaluate the performance of new laboratory-based HIV diagnostic algorithm in an inpatient population of Southwest China over the initial 6 months by compared with the old algorithm. Plasma specimens collected from inpatients from May 1, 2016, to October 31, 2016, are submitted to the laboratory for screening HIV infection performed by both the new HIV testing algorithm and the old version. The sensitivity and specificity of the algorithms and the difference of the categorized numbers of plasmas were calculated. Under the new algorithm for HIV diagnosis, 170 of the total 52 749 plasma specimens were confirmed as positively HIV-infected (0.32%). The sensitivity and specificity of the new algorithm were 100% (170/170) and 100% (52 579/52 579), respectively; while 167 HIV-1 positive specimens were identified by the old algorithm with sensitivity 98.24% (167/170) and 100% (52 579/52 579), respectively. Three acute HIV-1 infections (AHIs) and two early HIV-1 infections (EHIs) were identified by the new algorithm; the former was missed by old procedure. Compared with the old version, the new algorithm produced fewer WB-indeterminate results (2 vs. 16, $p = 0.001$), which led to fewer follow-up tests. Therefore, the new HIV testing algorithm is more sensitive for detecting acute HIV-1 infections with maintaining the ability to verify the established HIV-1 infections and can dramatically decrease the greater number of WB-indeterminate specimens.

Keywords : algorithm, diagnosis, HIV, laboratory

Conference Title : ICTID 2017 : International Conference on Tests for Infectious Diseases

Conference Location : Singapore, Singapore

Conference Dates : May 04-05, 2017