Reducing time to new HIV diagnosis – time for change in the HIV diagnostic algorithm?

Authors:
Moso MA[1,2,3], Singh KP[1,2], Lewin SR[1,2,4], Williamson DA[2,5]

[1] Victorian Infectious Diseases Service, The Royal Melbourne Hospital at the Peter Doherty Institute for Infection and Immunity, Melbourne, [2] Department of Infectious Diseases, The University of Melbourne at the Peter Doherty Institute for Infection and Immunity, Melbourne, [3] Department of Microbiology, Royal Melbourne Hospital, Melbourne, [4] Department of Infectious Diseases, Alfred Hospital and Monash University, Melbourne, [5] Victorian Infectious Diseases Reference Laboratory (VIDRL) at the Peter Doherty Institute for Infection and Immunity, Melbourne

Background:
In Australia, the national laboratory case definition for HIV is fulfilled with a repeatedly positive HIV screening test followed by a positive western blot (WB), or positive p24 antigen confirmed by neutralisation on two separate specimens. Although this approach maximises test specificity, it is limited by slow test turnaround time and need for repeated specimen collection for p24 assays. We sought to assess time to HIV diagnosis for both acute and established infection using the current national case definition.

Methods:
Cases of newly diagnosed HIV at the Royal Melbourne Hospital from July 2017 to May 2021 were reviewed. Results of the screening HIV immunoassay, WB, p24, HIV viral load (VL) and CD4 count were collected. Time to HIV diagnosis was calculated from date of first sample collection to the date when case definition for HIV was fulfilled. Time from initial sample collection to antiretroviral therapy (ART) commencement was also recorded. Differences between individuals diagnosed through WB and p24 assay were compared using Wilcoxon rank sum.

Results:
31 cases of HIV were diagnosed during the study period. 25 fulfilled case definition through positive WB and six with indeterminate or negative WB (acute infection) fulfilled criteria by p24 assay. Time to diagnosis was significantly longer in acute versus established infection (median 10 vs 5 days, p=0.004). Individuals diagnosed through p24 had significantly higher VL compared to individuals diagnosed through WB (median 1,273,358 vs 119,002 copies/ml, p=0.008). ART was commenced a median of 10 days post initial sample collection and was the same for individuals diagnosed through WB and p24.

Conclusion:
The national diagnostic algorithm is well established but has several limitations, with double the time required to confirm diagnosis in acute HIV. The availability of newer assays, including TGA-approved nucleic acid amplification tests for HIV diagnosis, should prompt re-evaluation of our diagnostic strategy.

Disclosure of Interest Statement:
No relevant disclosures