

## A Quality Assessment Scheme to Standardise the Outcome of HIV Genotypic Resistance Testing in a Group of Asian Laboratories

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**Objective** The TREAT Asia Network is evaluating HIV drug resistance in a comprehensive capacity building programme in the Asian region. The aim is to facilitate surveillance for resistant virus across subtypes and to monitor the development of resistance in individuals receiving antiretroviral therapy. The TREAT Asia Quality Assessment Scheme (TAQAS) aims to standardise HIV genotypic testing (genotyping) outcomes and to permit meaningful and confident comparison of results from different clinics and testing centres.

**Methods** TAQAS was implemented in 11 Asian laboratories in March and October 2006. Panels of 5 samples were tested. Samples were either plasma from HIV-infected persons or amplified virus spiked in to negative plasma. Genotyping was performed using laboratories' standard protocols. Sequence quality assessment included comparison with reference laboratory sequences or consensus sequences from all the laboratories' results.

**Results** Phylogenetic analysis confirmed accuracy and lack of contamination of all the nucleotide sequences in all laboratories' results. The results varied in the percentage of nucleotide mixtures (NMs) of wildtype and mutant virus sequenced across all samples (Panel 1: 0% - 62%; Panel 2: 0% - 83%), and drug resistance mutations reported (Panel 1: 78% - 93%; Panel 2: 78% - 98%). Most laboratories (7 of 9) improved in their detection of NMs in Panel 2. In both panels, agreement between laboratories using various systems to interpret drug resistance was approximately 65%, and >90% when all laboratories used the same interpretation system ([www.HIVDB.stanford.edu](http://www.HIVDB.stanford.edu)).

**Conclusion** High quality genotyping results were achieved in a group of Asian laboratories. Some differences in the outcomes of sequencing, sequence editing and interpretation of drug resistance were identified. Despite the use of different sequencing schemes and platforms, the use of a common interpretation system yielded agreement on interpretation of resistance across laboratories. The scheme will be expanded and the variation in outcomes of HIV genotyping between laboratories addressed.

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