

## Prevalence of Pretreatment Drug HIV-1 Mutations in Moscow, Russia

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**Abstract :** An adequate choice of the initial antiretroviral treatment determines the treatment efficacy. In the clinical guidelines in Russia non-nucleoside reverse transcriptase inhibitors (NNRTIs) are still considered to be an option for first-line treatment while pretreatment drug resistance (PDR) testing is not routinely performed. We conducted a cohort retrospective study in HIV-positive treatment naïve patients of the H-clinic (Moscow, Russia) who performed PDR testing from July 2017 to November 2021. All the information was obtained from the medical records anonymously. We analyzed the mutations in reverse transcriptase and protease genes. RT-sequences were obtained by AmpliSens HIV-Resist-Seq kit. Drug resistance was defined using the HIVdb Program v. 8.9-1. PDR was estimated using the Stanford algorithm. Descriptive statistics were performed in Excel (Microsoft Office, 2019). A total of 261 HIV-1 infected patients were enrolled in the study including 197 (75.5%) male and 64 (24.5%) female. The mean age was  $34.6 \pm 8.3$  years. The median CD4 count - 521 cells/ $\mu$ l (IQR 367-687 cells/ $\mu$ l). Data on risk factors of HIV-infection were scarce. The total quantity of strains containing mutations in the reverse transcriptase gene was 75 (28.7%). From these 5 (1.9%) mutations were associated with PDR to nucleoside reverse transcriptase inhibitors (NRTIs) and 30 (11.5%) - with PDR to NNRTIs. The number of strains with mutations in protease gene was 43 (16.5%), from these only 3 (1.1%) mutations were associated with resistance to protease inhibitors. For NNRTIs the most prevalent PDR mutations were E138A, V106I. Most of the HIV variants exhibited a single PDR mutation, 2 were found in 3 samples. Most of HIV variants with PDR mutation displayed a single drug class resistance mutation. 2/37 (5.4%) strains had both NRTIs and NNRTIs mutations. There were no strains identified with PDR mutations to all three drug classes. Though earlier data demonstrated a lower level of PDR in HIV treatment naïve population in Russia and our cohort can be not fully representative as it is taken from the private clinic, it reflects the trend of increasing PDR especially to NNRTIs. Therefore, we consider either pretreatment testing or giving the priority to other drugs as first-line treatment necessary.

**Keywords :** HIV, resistance, mutations, treatment

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