

## RATES OF TRANSMITTED DRUG RESISTANT MUTATIONS IN NEWLY DIAGNOSED HIV IN NSW 2004-2015

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**Background:** NSW is working towards the virtual elimination of HIV. By the end of 2016 91% of those in care are on treatment, and over 6,000 are enrolled in a NSW PrEP implementation study. Timely drug resistance surveillance data is needed to simultaneously monitor for trends in resistant mutations with evolving treatment and prevention strategies.

**Methods:** Data linkage was performed between the statewide drug resistance database and NSW HIV notifications. 8994 HIV-1 *polymerase* sequences were analysed using the Stanford HIV algorithm for reverse transcriptase (RT) and protease (PR) gene mutations. Analysis was restricted to notifications where resistance testing was performed within 12 months of HIV diagnosis. Rates of transmitted drug resistance mutations (TDRMs) were calculated for non- nucleoside (NNRTI), nucleoside (NRTI) and PR classes. Further analysis was performed of specific mutations conferring resistance to tenofovir (TDF) and emtricitabine (FTC).

**Results:** 2573 sequences linked to the HIV notification database; 1493 were from specimens collected within 12 months of diagnosis. There was an overall decrease in annual rates of TDRM of any class, from a peak in 21.3% in 2006 to 9.3% in 2015. Rates of resistance by class were 5.1% (NRTI), 3.5% (NNRTI), 2.8% (PR). During this period, 9.3% had single, 1.1% dual and 0.7% triple class resistance. While there were no high level TDF resistance mutations, 0.7% (11/1493) contained mutations conferring high level resistance to FTC (all M184V). There was no significant difference in rates of mutations by exposure category, country of birth, place of acquisition or subtype.

**Conclusion:** There was a decrease in overall TDRMs from 2004-2015. The rate of high level resistance to TDF or FTC was 0.7%, however all contained mutations that reduce FTC susceptibility while increasing susceptibility to TDF. Ongoing statewide monitoring of TDRMs is needed during PrEP and expanded treatment rollout.

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